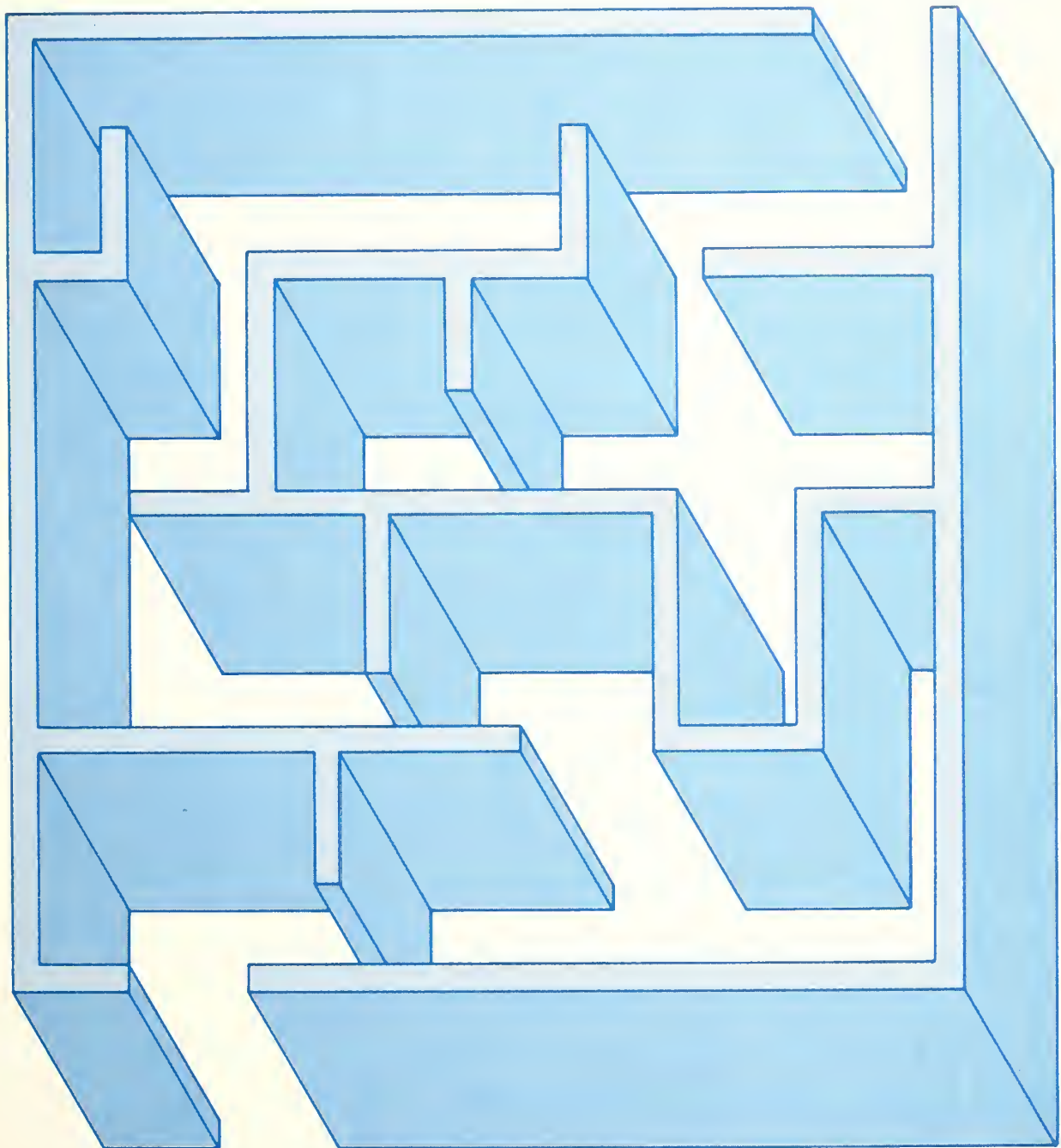


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TECHNICAL PAPER NO. 45
Issued October 1978

1972-1973 U.S. Consumer Expenditure Survey

A Preliminary Evaluation

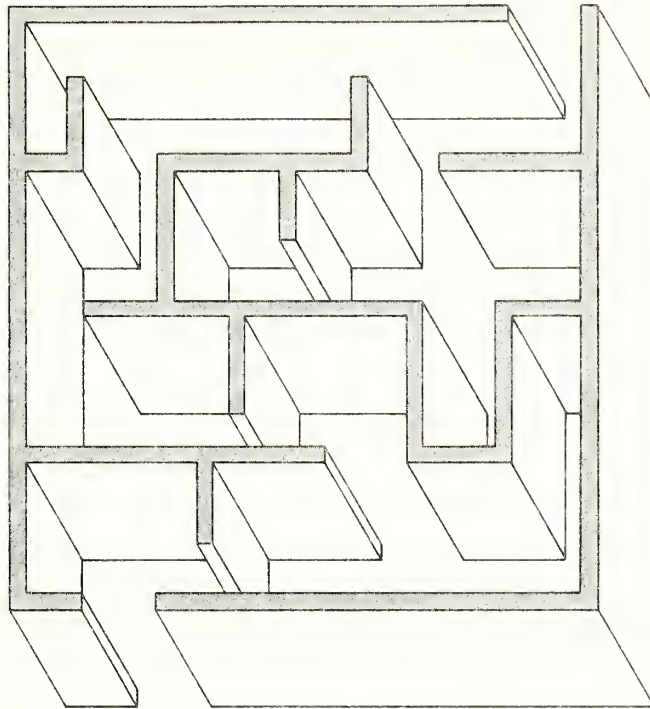


U.S. DEPARTMENT OF COMMERCE
Bureau of the Census

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A Preliminary Evaluation



U.S. Department of Commerce

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The survey data used in the evaluation were derived principally from reweighted original survey data tapes and do not incorporate editing changes that may have been made at later stages of processing by the Bureau of Labor Statistics (BLS), which is responsible for the official survey results. The data in this report may, therefore, differ somewhat from those already published or to be published by BLS or which may be derived from public-use data tapes issued by that agency. The author takes full responsibility for any errors or misinterpretations in the use of the data as well as for the conclusions and recommendations in the report.

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The 1972-73 U.S. Consumer Expenditure Survey: A Preliminary Evaluation

INTRODUCTION

A large-scale national survey of consumer expenditures was conducted in 1972-73 by the Bureau of the Census for and under the sponsorship of the Bureau of Labor Statistics (BLS), primarily to update the weights and the selection of items for the Consumer Price Indexes (CPI). The methodology used in the survey represented a major departure from that used in prior decennial expenditure surveys, the last of which was conducted by BLS in 1960-61.¹ Some of the details of the new procedures are described in chapter 1, but the two principal components were the following:

- (1) A national panel of about 10,000 families each year was visited at quarterly intervals to obtain information by retrospective interview for the larger items of expenditure and certain repetitive items (rent, utilities, etc.). Specific expenditure categories were covered either each quarter or at semiannual or annual intervals, depending primarily on expenditure size.
- (2) A rotating sample of about 200-250 families each week was asked to keep a diary or record of all expenditures for the subsequent 2-week period. Although the purpose of the diary operation was principally to cover smaller items of expenditure, the fact that all categories were included provides a number of options in compiling estimates as well as many research opportunities.

In the previous BLS expenditure surveys, in contrast, the basic procedure consisted of retrospective questioning covering an entire calendar year for most categories of expenditure. The annual inquiry was supplemented by a 1-week recall procedure for detailed food purchases and a few other small items.

¹U.S. Department of Labor, Bureau of Labor Statistics, "Consumer Expenditures and Income: Survey Guidelines," *Bulletin 1684*, Washington, 1971.

Because of the importance of the survey to the CPI and the major methodological changes introduced in the 1972-73 survey, the need for a full-scale evaluation of the techniques is clearly evident. Such an appraisal is especially important in view of present plans to institute a continuing consumer expenditure survey using a similar approach, in lieu of the intermittent efforts which have characterized this field in the past. Moreover, the findings can be highly valuable in connection with a variety of other major survey undertakings which use, or could use, similar methods.

In this evaluation, an attempt will be made to assess the adequacy of the survey procedures in general, the relative merits of using interviews vs. diary recording for particular categories of expenditures, the implications of the findings with respect to improvements in methodology for future use either in a continuing expenditure survey program or other similar undertakings, and will also detail further research needs. The findings and conclusions are regarded as preliminary in the sense that they are based on only part of the data that will be developed in the course of the evaluation. They may be modified as information in greater depth and detail becomes available. The results presented here, however, should provide some general guidance to users of the published reports and public-use data tapes based on the survey which are being issued by BLS.

A more detailed description of the 1972-73 survey procedures is presented in Chapter 1. A summary of the principal findings will be found in Chapter 2. Chapters 3 to 11 present the detailed findings for the various expenditure categories. Chapter 12 contains the conclusions and recommendations evolving from the findings, a discussion of possible alternative data sources, and a recital of some additional needs for methodological research.

CHAPTER 1

Methodology of the 1972-73 Survey

A limited description of the survey methods will be useful for understanding the discussion in the remainder of this report. Additional details are presented in various other publications.¹

The samples for both phases of the operation—the quarterly panel and the diary procedure—were selected in a similar way, pursuant to the multistage designs used for most census-operated household surveys. The first stage entailed the selection of a stratified set of primary sampling units (PSU's), consisting either of Standard Metropolitan Statistical Areas (SMSA's) or groupings of contiguous counties. A total of 216 such PSU's was selected, the largest SMSA's representing only themselves for purposes of the survey, but the remainder representing separate strata or groupings of similar areas. Only 30 of the PSU's were covered in both survey years. The remainder were grouped into pairs of similar areas, with the members of each pair assigned randomly to one survey year or the other.

A somewhat unusual procedure was followed in selecting sample units within the designated PSU's. First, all addresses listed in the 1970 Census 20-percent sample² in the designated PSU's were stratified according to certain characteristics—household size, income bracket, race, and housing tenure—which are closely correlated with expenditures. A systematic sample of addresses was then selected, with equal probabilities, within each stratum in a given PSU.³ Of course, many changes in occupancy would have occurred since the time of the 1970 Census. However, the correlations in occupant characteristics over the period of a few years were adjudged to be sufficiently large so that considerable gains in sampling reliability would accrue from the within-PSU stratification. The usual provisions, as in other Census operations, were made to reflect new construction since the census date in the sample.

The quarterly panel operation started in January 1972 and concluded in March of calendar year 1974. Because of administrative and resource problems, the diary operation did not begin until mid-1972, and continued until the same point in 1974.

For convenience, however, the diary results are also attributed to 1972 and 1973 in this report even though they actually extend 6 months beyond those respective years.

Diary Operation

The sample for the diary operation for each year was subdivided into 52 systematic subsamples of approximately equal size.⁴ A different subsample was introduced each week of the year, and the residents were asked to keep a record of all expenditures for the 14 days following the date of contact.

Three visits were made to each household for purposes of the survey. In the first visit, the usual background information about the family was obtained by interview, and the respondent was given a record book to use for the first 7 days. A second visit was made a week later to collect and check the first diaries and to place the books for the second 7 days. The final visit was made the following week to collect the second diaries. In the event the family had failed to fill the record, an attempt was made to obtain the information by retrospective interview.

The diary records for a given 7-day period contained a set of two facing pages for each day of the week. The left-hand page was devoted entirely to food purchases for home use. It was subdivided into a number of sections covering broad food categories (dairy and bakery products; meat, poultry, and fish; fruits and vegetables; etc.). Several lines were provided for entering purchases in each category. A section was provided at the top of the right-hand page for recording expenditures for meals and snacks purchased in restaurants and other eating places. The remainder of the right-hand page was subdivided into small sections covering broad categories of nonfood items, with principal emphasis to the kinds of small expenditures for which the diary was primarily intended. The innumerable types of expenditures that could not be itemized because of space considerations were relegated to a catch-all section. Since only one record book was provided for a given period, it is likely that a single respondent (usually the homemaker) kept the diary for the entire family. An illustration of the diary pages may be found in appendix B.

⁴The samples for the 4 weeks prior to Christmas each year were doubled in size in order to measure more reliably the exceptionally large volume of purchases at that time of year.

¹See, for example, U.S. Department of Labor, "The 1972-73 Consumer Expenditure Survey," *Monthly Labor Review*, December 1974.

²Considerably more detail, notably income data, was collected for this sample than for the remainder of the 1970 Census.

³The final sample unit used for enumeration purposes was the so-called "consumer unit," representing essentially a group of persons living at the same address who shared incomes and principal living expenses. There could be more than one consumer unit at a given address. For convenience in this report, the more descriptive term "family" will be used to denote consumer units.

Quarterly Panel

The sample of addresses selected for the quarterly panel for a given year was used throughout that year for purposes of the survey. For more efficient scheduling, the sample was subdivided into three systematic subsamples, and each subsample was visited on a different quarterly cycle. The first group was interviewed in January, April, July, October, and the following January; the second in February, May, August, November, and the following February, etc. One reason for scheduling five visits to a family was to control the well-documented survey phenomenon known as "telescoping," that is, the tendency to report as having occurred in a given reference period an event (e.g., an expenditure) that actually took place earlier.⁵ The approach used for this purpose, generally termed "bounding," required that interviewers have in their possession information reported in prior interviews. If an item reported in the current reference period appeared to duplicate one recorded previously, the interviewer had a basis for questioning the reply and for discarding it if it actually was determined to be a repetition. Although also used for obtaining background information, the first quarterly visit was essentially to set up a record of recent expenditures to use as a basis for starting the "bounding" procedure in subsequent interviews.

If a family vacated a given address during the course of a year and was replaced by another, the subsequent information was obtained from the new occupants. In addition, the new occupants were asked to recall their expenditures back to the beginning of the year so that a full year's record would be available for a representative cross section of individual families, whether movers or not. The survey results published by BLS from the quarterly panel relate to the families in the sample at the conclusion of the year, including this "backup" data for in-movers. For purposes of this evaluation, however, the data are based on the families present at the time of a given quarterly interview; it is believed that those results would provide more accurate and complete aggregate expenditures for the year as a whole.⁶

The questionnaire for the quarterly panel was of imposing (if not overwhelming) size but, as previously indicated, not all items were asked each quarter. The information was obtained by personal interview, usually with only one household respondent. The subjects covered each quarter included home repairs and alterations, utility and fuel costs, clothing and household linens, equipment repairs, vehicle repairs and maintenance, and trips and vacations, among others. The questioning was conducted on a semiannual basis for small household appliances and equipment, furniture and other home furnishings, health expenditures, education, and a few miscellaneous

items such as catered affairs, funerals, and moving expenses. The topics covered on an annual basis included rent, mortgage payments and other housing costs, major appliances, vehicle purchases, insurance premiums, and subscriptions and memberships. In addition to these detailed inquiries, summary questions were included on overall food expenditures and on outlays for a limited number of smaller products and services; the primary purpose of these questions was to provide at least some rough measures of annual expenditures for these items for individual families. As might be expected, a good deal of information on demographic and socioeconomic characteristics, employment status, and income and other financial data was obtained in the course of the various interviews. A listing of the various sections of the quarterly questionnaire may be found in appendix C.

Besides the "bounding" procedure already described, a number of special techniques were employed for various expenditure categories in the quarterly panel. One technique was the "last payment" principle, which was used for continuous types of expenditures, such as electricity, gas, and other household utilities, usually billed on an intermittent basis not corresponding strictly to calendar months or other regular periods. The procedure followed was to ask in each quarterly interview for the amount of the last bill and the period to which it referred; this permitted converting the data to a uniform basis.

Another approach was the "inventory" method, which was used for household appliances, vehicles, and a few other items. Instead of being asked directly about expenditures for a given period, respondents were asked at the first interview whether they possessed the articles in question. If any such items were present, the date of acquisition was determined and, if within the previous year, its cost and a variety of other characteristics were recorded. The inventory differentiated between those items the family purchased for its own use and those it had received as gifts from persons outside the household. This inventory was updated at specified subsequent visits by inquiring about any new acquisitions the family had purchased or received as gifts. Questions were also asked at these updatings about items the family purchased as gifts for persons outside the household. Thus, there were two independent measures of expenditures for gifts—the estimated value of gifts received and the reported cost of gifts given—either of which could be used as part of the total expenditure estimate.

Another feature of the inventory technique is the possibility of deriving two separate expenditure estimates for each year. The first, which is the one ordinarily used, is a direct estimate of acquisitions in that year; this is derived by updating the inventory during the course of the year. The second is an indirect measure obtainable from the initial inventory in the survey for the following year, whereby items secured during the

⁵ Actually, "telescoping" can occur in either direction, but the main tendency in recall surveys of this kind is to place events more recently in time.

⁶ The differences arising from these two approaches were relatively small, and would not have much effect on the assessment of the data.

previous year can be identified from the reported date of acquisition.

Cooperation Rates

One of the principal initial concerns about instituting a complex system of this kind was the matter of achieving adequate levels of cooperation in the survey. This was one concern that was almost entirely allayed. The response rate in the quarterly panel started at nearly 95 percent for the first interview and dipped to only slightly less than 90 percent by the final (fifth) quarterly visit, even though the interviews ranged from 1½ to 3 hours in length depending on the phase of the cycle. In the diary operation, partly because of initial resource and administrative problems, the response rate started at only about 75

percent but gradually increased to, and held at, almost 90 percent once the difficulties were resolved.⁷

These results, incidentally, represent a major improvement over the experience in prior BLS surveys. In 1960-61, for example, only about two-thirds of the initially selected sample produced usable results. Substitutes were thrown into the breach at that time to increase the number of usable cases, but the true response rate, of course, is the degree of success with the original sample.

⁷ For further details, see Thomas C. Walsh, "Selected Results from the 1972-73 Diary Survey," Paper presented at the American Marketing Association/Bureau of the Census Seminar on Survey Methodology, Washington, October 1976.

CHAPTER 2

Summary of Findings for Expenditure Categories

The rest of this report attempts an assessment of the adequacy of the expenditures data obtained in the 1972-73 survey for the various categories of goods and services. The general approach is to compare the estimates from the quarterly panel with those from the diary operation, where the same subject was covered in both, and to relate either or both to various independent sources of expenditure data. The principal objectives are to assess which of the survey procedures appeared to be more effective for particular categories of expenditures and to determine what types of improvements and modifications the results may suggest. The conclusions can be only tentative because of major uncertainties about the validity and comparability of the independent data used as a standard and because of the unavailability of enough detail to explore the subject in sufficient depth. Nevertheless, in a substantial number of cases, persistent patterns emerged across category lines and pointed in rather specific directions.

A description of the independent data sources used in these comparisons is presented in appendix A. Cited most frequently are the Personal Consumption Expenditures (PCE) estimates prepared by the Department of Commerce in conjunction with the Gross National Product Accounts. The PCE estimates represent, essentially, the market value of goods and services purchased by persons and nonprofit institutions in the United States. The estimates are developed from a variety of primary data sources by means of a complex series of transformations, the reliability of which is indeterminate. Moreover, the PCE data are compiled only in summary form on a current basis. Detailed estimates are provided only for benchmark (quinquennial economic census) years, and the most recent estimates available at this writing are for 1967. In order to derive the level of disaggregation needed for these comparisons, it was necessary for the author to update the detailed PCE estimates for 1967 to 1972, using appropriate Census of Manufactures and Census foreign trade data, a step which, of course, adds further to the uncertainty. The other independent data derive mainly from Government administrative, census, or survey sources, although some private sources were also used. In some sectors, such as education and health, the conceptual differences between the PCE and the 1972-73 survey data were so great that dependence had to be placed entirely on the other independent sources for comparative purposes.

It should be noted that the survey results used in this evaluation are derived from special tabulations of reweighted original data tapes. They do not reflect editing changes BLS may have made at later stages of processing. As a result, the figures

may differ somewhat from those already published or to be published by BLS or which may be compiled from the public-use data tapes recently issued. Certain differences in time reference and conceptual approach would also contribute to the disparities. For example, the BLS estimates for specific product categories generally exclude gifts purchased for persons outside the household which are, instead, grouped together as a separate aggregate. For this evaluation, however, the gifts are included in their respective categories in order to achieve closer correspondence with the independent estimates. For the same purpose, the estimates for appliances, furniture, and certain other items in the evaluation are restricted to those acquired in new form, whereas the BLS estimates often combine new and used products.

Table 2-1 summarizes the findings for the various expenditure categories, which are covered in greater detail in later chapters. For purposes of this summary some of the detailed categories have been combined and averaged. The table designates the "best" survey source, that is, the one generally closest to the independent data, in cases where the two survey estimates are significantly different. The ratios of the "best" survey estimates to the independent estimates are indicated in terms of broad class intervals, although the actual ratios are also shown. Although the magnitude of these ratios may provide some indication of the adequacy of the survey estimates, the margins can be regarded only as rough approximations, for reasons stated above, and have been used primarily to detect any consistent and meaningful patterns that might relate to the methodology.

Food and Beverage Expenditures (Chapter 3)

After allowing insofar as possible for various conceptual incomparabilities, there appeared to be a reasonably close correspondence between the diary estimates of food purchases for home use and the independent sources. The fact that the homemaker—the usual diarykeeper for the family—is ordinarily responsible for most of the purchases was undoubtedly a positive factor. The allocation of maximum space on the diary record to food expenditures probably contributed as well.

There were considerable disparities, however, in the precision with which various food categories were reported. The reporting apparently was most complete for relatively costly items, such as meat and poultry, and for those used promptly and on a daily basis, such as milk and other dairy products and bread and fresh-baked items. The coverage seemed to be considerably less

complete for food staples, such as flour, shortening, and sugar, which are bought less frequently and used over a considerable period of time. One of various possible explanations for these differences is that many respondents may not start keeping their diaries promptly—or do not make entries, as requested, on a daily basis—but later attempt to reconstruct the omitted periods by memory. In doing so, items which represent the main course in a meal or which are purchased and used relatively frequently might be more readily recalled. The generally smaller differences for fruit products as compared to vegetables may lend some support to this thesis; as the former are more generally used as snacks or separate courses which may stand out more distinctively than items which are usually blended into a meal.

A less anticipated finding was the close correspondence between the survey and independent estimates for meals in restaurants or other eating places where a substantial proportion of the outlays would be made by individual family members other than the homemaker. The prominent positioning of the section for reporting purchased meals on the diary record and the emphasis given to this subject at the time of the diary-checking procedure might have contributed to this outcome. At the same time, the marked deficiency for reporting alcoholic beverages confirms the continued failure of household surveys to measure a sector where there is considerable sensitivity about reporting.¹

Small Expenditures Other Than Food (Chapter 4)

For various small expenditure items other than food, for which the diary was the principal if not only source, a predominant factor appeared to be the role of the various family members in making purchases. Where the responsibility was principally that of the homemaker, such as for laundry or cleaning products or household services, the reporting appeared to be considerably more complete than if other members were substantially involved, as for toiletries or hair care. Even for those expenditures where the homemaker predominated, however, the reporting appeared to be generally less adequate than for food purchases; probably partly a reflection of the much smaller amount of space and attention given to non-food items on the diary record. The limited efforts to measure small nonfood expenditures through summary questions in the quarterly panel did not appear to be especially productive, although in one or two cases the figures appeared to be more complete than the weakest of the diary estimates.

Clothing Expenditures (Chapter 5)

As was anticipated to some extent, clothing expenditures represented one of more troublesome sectors. Neither survey

source showed any clear-cut overall advantage and neither corresponded very closely with the independent data. Following the pattern observed throughout the analysis—and expected from previous experience—the larger items (suits, coats, etc.) were apparently more adequately reported and the quarterly panel emerged as the superior source in this case. Also not surprisingly, the diary procedure represented the “best” source for a diversified category such as accessories, where it was probably difficult to communicate the full range of items in an interview procedure. For no apparent reason, the diary estimates also provided the closer correspondence with the independent data for footwear, although this subject was probed in much greater detail in the quarterly panel. Both estimates, however, fell considerably short of the independent levels for accessories and footwear.

For the broad range of middle and lower priced clothing products, the advantage seemed to alternate between the two survey sources, without any consistent relationship to the importance of the item. One problem that complicated the appraisal—and that extended to most other expenditure classes as well—was the existence of a large residual clothing group in the diary estimates, consisting mainly of incomplete or inadequately described entries, which could not be assigned to specific categories.

Household Appliances (Chapter 6)

The results for both major and minor household appliances, for which the quarterly panel was the rather evident source, represented one of the more successful outcomes of the survey. The “inventory” approach, described earlier, was evidently an important factor in this showing and it appeared that the benefits could be maximized when the technique was used to its fullest extent. For categories in which gifts are significant (e.g., small kitchen appliances and sound equipment), this appeared to suggest using, for purposes of estimation, the estimated value of gifts received by the family from others (which derived directly from the inventory of items on hand) as opposed to the reported cost of gifts given by the family to persons outside the household, which was based on the family’s recollection of previous purchases.² Also, there was some evidence in favor of pooling the two estimates obtainable for a given year under the inventory approach, the one based directly on the survey for that year and the other derived indirectly from the initial inventory in the survey for the following year. Comparisons between those two sets of estimates indicated no significant differences for many appliance categories and no evident superiority of either over the other in relation to the independent sources. Pooling of the estimates would have roughly the effect of doubling the sample size, a considerable advantage for items with especially large variances.

¹Some special check questions, asked at the time diaries were collected in an effort to overcome this deficiency, provided data that would have increased the survey estimates by about 15 percent (no actual correction was made, however). Even on that basis, the survey aggregates would have amounted to only about half of the independent levels. The understatement in the survey estimates may be somewhat exaggerated because some of the cost of alcoholic beverages may have been included in the cost of purchased meals.

²Although these are, theoretically, measurements of the same thing, the estimated value of gifts received exceeded the reported cost of gifts given in virtually every appliance category, with an especially large difference for small kitchen appliances. A further discussion of this matter may be found in chapter 6.

Household Furnishings (Chapter 7)

This broad category provided a rather clear-cut demonstration of the relationship between the size of an expenditure and the likelihood of its being reported. The closest correspondence with the independent estimates was found for furniture, the most costly class, followed by the next most significant group—floor, window, and furniture coverings. In both cases, the quarterly panel appeared to be the superior source, partly on the basis of sampling variances. The survey estimates fell considerably short for household linens and especially for smaller products, such as dinnerware and cookware, luggage, and decorative items. For these latter items, the diary estimates, although themselves deficient, appeared to be at least equivalent in coverage to those from the interview panel.³

Automobile and Vehicle Expenses (Chapter 8)

The survey data for nearly all automobile-related expenditures, except for the diversified accessories group, corresponded rather closely with the independent estimates. Moreover, although the homemaker normally would have less responsibility for this sector than for most others, the diary estimates were not significantly different from the interview panel estimates for some of the smaller categories, particularly gasoline and accessories. The quarterly panel was, as usual, clearly more effective for the larger items—vehicles, tires, and insurance—and it also appeared to provide somewhat more complete results for maintenance and repair expenditures.

Housing Expenditures (Chapter 9)

With the exception of one rather diffuse category (fuel purchases), the survey and independent estimates of housing-related expenditures corresponded rather closely. Also, in the main, the diary-based data, again unexpectedly, matched those from the interview panel. The exception in the case of mortgage payments, may have resulted from the fact that some such disbursements are made directly through bank accounts, which could easily escape the attention of the diary keeper.

Health Expenditures (Chapter 10)

One of the more pleasant surprises was the relatively close correspondence between the survey and independent estimates for most health expenditures, usually considered to be one of the more treacherous areas in this kind of undertaking. A less optimistic reading might be that the survey results were at least as good as most previous endeavors of a similar nature, without attempting to categorize their accuracy in an absolute sense. In any event, the diary procedure once more provided the most unexpected outcome, in that the data seemed to hold up surprisingly well not only for small items such as drugs and medicine, but also for most professional health services. An exception was hospital services, for which even the quarterly panel data seemed somewhat deficient, possibly because of complications introduced by the pervasive role of health in-

surance and other third-party payors.⁴ Also, for health insurance premiums themselves, where the interview panel appeared to be reasonably adequate, the diary procedure was understandably ineffective, in view of the fact that payments are often made through payroll deductions which would rarely come to mind in completing a household diary.

Education, Travel, and Miscellaneous Expenses (Chapter 11)

It is harder to summarize for this remaining expenditure group because of the diversity of items. Although the evidence was limited, there appeared to be some deficiency in the reporting of education expenditures, possibly because of the difficulty in adequately covering college students in a household survey. The quarterly panel still appeared to be the better source for the larger payments (tuition, etc.). It seemed desirable to alter the survey procedures for students attending college away from home, so that they would be interviewed directly at their college quarters instead of, in some instances, obtaining proxy information from their parents at home. No direct comparisons were possible for other school expenses; but it appeared likely, based on other findings, that the smaller expenses—books, school supplies, meals outside of school boarding arrangements, etc.—as well as related items, such as recreational lessons, might better be approached through the diary procedure.

Comparisons with independent sources for travel and vacations could be made only indirectly in terms of the reported number of trips taken, rather than directly by expenditures. On this basis, the quarterly panel data appeared to be consistent with other findings. Because the validity of expenditures data may depend more on whether or not an expenditure is reported than on the precise amount of the expenditure, even this limited finding with regard to trips taken could be meaningful.

For the remaining subjects—transportation costs and miscellaneous products and services—a few generalizations may suffice, because the patterns appeared consistent with those already cited for items of a similar nature. For transportation costs, which were available only for the diary⁵, the more significant items (air and rail travel) were understandably more completely reported than were local transit fares. The miscellaneous category for which comparisons were made mainly comprised relatively large items—pianos, funeral costs, etc. For the most part, the quarterly panel was either the only source or the superior source for these items, and the survey results corresponded reasonably well with the independent estimates in the majority of cases. One major exception was the large disparity for watches and jewelry, and this could have resulted in part from sensitivity in reporting.

⁴The survey objective was to measure "out-of-pocket" costs, net insurance and other reimbursements.

⁵Transportation costs for overnight trips and vacations were obtained in the quarterly panel.

³In fact, for the dinnerware-cookware category, the diary estimates were appreciably higher and, thereby, closer to the independent levels.

Table 2-1.—Summary of Findings for Expenditure Categories:
1972-73 Expenditure Survey Data Compared to Independent Sources

Category	Chapter number for detailed data	"Best" survey source: ¹ Q=quarterly panel D =diary operation N =no significant difference	Ratio of "best" survey estimate to independent estimates				Independent sources used ⁴
			Best judgment as to range of ratios (allowing for conceptual and other differences between sources). ²		Survey results		
					Actual ratio of survey to independent estimates ³	Estimated standard error of ratios	
			A=.9 or higher B=.8 to .89 C=.7 to .79	D=.6 to .69 E=less than .6			
Food purchases for home use*	3	D**	A, ⁵ B		.85	<.01	ERS, PCE
Meat or poultry			A		1.02	.03	
Milk and fresh dairy products			A, B		.93	.02	
Bread and fresh baked items			A		.98	.02	
Food staples (flour, sugar, shortening, salad dressing, etc.)			D		.63	.02	
Fruits—fresh or processed			B		.85	.03	
Vegetables—fresh or processed			C		.74	.02	
Purchased meals or snacks*	3	D	A		1.11	.02	Cen-Bus, PCE
Alcoholic Beverages*	3	D	E		.39	.03	Cen-Bus, PCE
Small nonfood expenditures	4	D**					PCE
Products							
Items purchased mainly by homemaker (laundry and cleaning products, paper goods, etc.)			C		.72	.02	
Items likely to be purchased by various members (toiletries, film, reading material, etc.)			D, E		.57	.02	
Services							Cen-Serv, PCE
Mainly responsibility of homemaker (laundry services, household help, etc.)			A		1.04	.02	
Dispersed responsibility (hair care, shoe and watch repairs, sport events and entertainment, etc.)			C, D		.68	.02	
Clothing expenditures*	5	N	C		.72	.01	Cen-Bus, PCE
Larger items (suits, coats, etc.)		QP	A		1.08	.03	PCE
Medium and smaller articles (dresses, shirts, underwear, hosiery, etc.)*		N	⁶ C		.76	.01	MRCA, PCE
Accessories (ties, handbags, gloves, etc.)		D	C		.72	.03	PCE
Footwear*		D	B, C		.79	.01	Cen-Bus, PCE
Household appliances	6	**QP					PCE
Major appliances (refrigerators, washers, television, etc.)			⁷ A		1.00	.02	
Minor appliances (toasters, hair dryers, radios, etc.)			⁷ A		1.01	.03	
Home furnishings	7						
Furniture*		QP	A, B		.91	.03	Cen-Bus, PCE
Other larger items (floor coverings, drapes, slipcovers, etc.)*		QP	B, C		.77	.03	Cen-Bus, MRCA, PCE
Household linens (sheets, tablecloths, towels, etc.)		N	C, D		.69	.02	Cen-Bus, MRCA, PCE
Smaller items (dinnerware, cookware, luggage, decorative items, hand tools)		N	E		⁸ .50	.02	PCE
Automobile and Vehicle Expenses	8						
Vehicle purchase*		**QP	A		1.01	.03	AHS, PCE
Gasoline and oil*		N	A		.98	.01	Cen-Bus, PCE
Tires and tubes*		QP	A		.94	.02	PCE
Accessories (batteries, air-conditioners, seat covers, car radios, etc.)*		N	D		.67	.02	PCE
Vehicle repairs, maintenance and miscellaneous expenses*		QP	A, B		.88	.02	PCE
Vehicle Insurance Premiums		QP	A		.93	.02	A.M. Best

Footnotes at end of table.

Table 2-1.—Summary of Findings for Expenditure Categories:

1972-73 Expenditure Survey Data Compared to Independent Sources—Continued

Category	Chapter number for detailed data	"Best" survey source: ¹	Ratio of "best" survey estimate to independent estimates				Independent sources used ⁴
		QP=quarterly panel D =diary operation N =no significant difference	Best judgment as to range of ratios (allowing for conceptual and other differences between sources). ²		Survey results		
					Actual ratio of survey to independent estimates ³	Estimated standard error of ratios	
			A=.9 or higher B=.8 to .89 C=.7 to .79	D=.6 to .69 E=less than .6			
Housing expenditures	9						
Rent*		N	A		1.03	.02	PCE
Mortgage payments and taxes*		QP	A		1.02	.04	AHS
Home repairs and alterations*		N	A		1.04	.06	SORAR
Utility costs (electricity, gas, water, telephone, etc.)*		N	A		1.02	.02	PCE
Fuel costs (fuel oil, bottled gas, coal, etc.)*		N	⁹ C, D		.61	.02	PCE
Health expenditures	10						
Hospital services*		QP	C		.76	.04	CHAS, SSA
Physician, dental, and other professional services*		N	A		.98	.02	CHAS, SSA
Drugs and sundries*		D	A		1.02	.05	PCE, SSA
Health insurance premiums*		QP	A		1.10	.03	HIS
Other expenditures	11						
Education tuition and fees*		QP	¹⁰ B		.82	.02	NCES
Trips and vacations		**QP	¹¹ A		1.02	.06	NTS
Public transportation		**D					PCE
Local (bus, subway, taxi, etc.)*			¹² D, E		.58	.04	
Other (airline, railway)*			¹² B, C		.85	.08	
Miscellaneous		QP					PCE
Large items (pianos, funeral expenses, etc.)*			A, B		.93	.06	
Moderate items (musical instruments, appliance repairs, etc.)*			B		.86	.06	
Watches and jewelry*			E		.56	.02	

*Signifies that comparisons are based on 2 years of data. For other categories, comparisons were based on only 1 year, usually 1972. Note that, for food expenditures for home use, only the overall total is based on 2 years; the comparisons for the various food categories were based on 1972 only. The size of the standard errors shown for the ratios (next to last column), of course, reflect the differences between 1 and 2 years of coverage.

¹The "best" survey estimate is defined as the one—quarterly panel or diary estimate—which was closest to the independent figures. Where a double asterisk (**) is appended to the code, it indicates the specified source was the only one for which a comparison with the independent estimates could be made in the required detail. In most of these latter cases, the specified source was also the only realistic source for the data in question.

²The ranges in this column are not always entirely consistent with the computed ratios in the next column; but they attempt to make allowances for conceptual differences between the survey and independent sources, disparities among the independent sources themselves, and other factors for which numerical adjustments could not be made.

³The ratios are based on weighted averages of the survey data (numerator of ratio) and of the independent data (denominator of ratio) for the various individual categories combined on a given line of the table. Where the two survey estimates were not significantly different (code "N" in the "best" survey source column), the quarterly panel and the diary data were averaged. Where more than one independent source is specified, those data were averaged for this purpose.

⁴The independent sources, in alphabetical order, are as follows (see appendix A for further description):

AHS—Annual Housing Survey, Bureau of the Census

A.M. Best—Insurance company premium data compiled by A.M. Best and Co.

Cen-Bus—1972 Census of Business Merchandise Line Data

Cen-Serv—1972 Census of Selected Service Industries

CHAS—Center for Health Administration Studies, University of Chicago

ERS—Economic Research Service, U.S. Department of Agriculture

HIS—Health Interview Survey, National Center for Health Statistics, U.S. Department of Health, Education and Welfare

MRCA—Panel data from the Market Research Corp. of America

NCES—National Center for Education Statistics, U.S. Department of Health, Education and Welfare

NTS—National Travel Survey, Bureau of the Census

PCE—Personal Consumption Expenditures, GNP Accounts, U.S. Department of Commerce

SSA—Social Security Administration, U.S. Department of Health, Education and Welfare

SORAR—Survey of Residential Alterations and Repairs, Bureau of the Census

⁵Uncertainty about the magnitude of a conceptual difference precludes a more precise judgment for this borderline value. The ratio of the survey to the independent estimate is understated because the PCE figure used as a base related to "off premise" consumption and includes (in addition to food purchased for home use) snacks purchased in stores (and other establishments which are not eating places) but consumed outside the home. The survey estimate, however, relates only to food purchased for home use. The reverse situation holds for the PCE and survey estimates for "purchased meals and snacks" where the ratio is overstated.

⁶This is an average value for the seven major categories included in this bracket. Of these, two were significantly more completely reported and two less so than indicated by the coded mean value, but there was no clear-cut distinction among these by expenditure size.

⁷Using optimum estimate (including value of gifts received and averaging the two alternative estimates for the year), see text. Under the standard estimation, the rating for major appliances would still be "A," but that for minor appliances would be "B."

⁸Survey estimates used in the computation were diary estimates for dinnerware-cookware and hand tools and an average of the two estimates for decorative items and luggage.

⁹Computed ratio is understated (magnitude uncertain) because the PCE base figure (but not the survey estimate) includes fuel used in rental quarters which is supplied and directly paid for by the landlord.

¹⁰Comparison based on college tuition only.

¹¹Comparison based on number of trips taken rather than expenditure.

¹²Uncertainty about allocation of a large unclassifiable residual (about 15 percent of transportation expenditures) precludes a more precise judgment for these categories.

CHAPTER 3

Food and Beverage Expenditures

The diary operation, as would be expected, is the source of information on detailed food expenditures. The entire left-hand page of the two facing pages provided in the diary for each day of the reporting period was devoted to food expenditures for home use. A separate section at the top of the right-hand page was provided for recording expenditures for meals and snacks purchased and eaten away from home.

In addition, the quarterly panel provided estimates on overall expenditures each quarter on food and beverages for home use and on meals and drinks purchased and consumed elsewhere. Although intended principally to produce an annual expenditure figure for each individual family (not obtainable from the rotating sample used in the diary operation), these data provided some checks on the diary-based estimates and some additional options in compiling the final estimates.

Overall Comparisons of Food and Beverages Expenditures

Experience has shown that reporting food and nonalcoholic beverage purchases for home use is usually one of the more successful aspects of household expenditure surveys. The frequency and regularity of purchases and the fact that a single individual, usually the housewife, is responsible for buying food all contribute to this end. In contrast, expenditures for meals purchased outside the home generally have been subject to a good deal of understatement. Such expenditures are often made by individual family members and may be unknown or incompletely known to the principal respondent. Finally, expenditures for alcoholic beverages—whether for home use or in eating or drinking establishments—are notoriously under-reported, no doubt because of sensitivity about such matters.

For purposes of judging the survey data, comparisons have been made with a variety of independent estimates of food and beverage expenditures. The principal source is the Personal Consumption Expenditures (PCE) component of the GNP accounts described earlier. Also used are continuing estimates of food expenditures developed by the Economic Research Service of the U.S. Department of Agriculture and merchandise line estimates from the 1972 Census of Business. As already stated, all of these sources are subject to unknown margins of error, compounded, in this case, by the difficulty in determining how much food output is consumed in the home as opposed to restaurants and other eating places. However, the considerable degree of consistency among these independent data lends some support to using them as yardsticks.

Table 3-1 presents a comparison of various independent estimates with the overall survey estimates based on the diary and quarterly phases. The diary estimates have been adjusted upward to account for food consumption during periods when the entire family was away from home on trips and vacations. Under the procedure followed in the survey, no entries were to be made in diaries during such periods. However, a special inquiry on expenditures during trips and vacations was made in the quarterly panel. The results indicated that the amount spent on food for home preparation (in this case in vacation homes or housekeeping facilities) was around \$1 billion a year. As would be expected, the amount spent on purchased meals and snacks was much higher—about \$3 billion annually.

As is evident in table 3-1, the survey data for both 1972 and 1973 for food consumed at home fall short of the independent data by an appreciable margin, a larger difference than might be expected on the basis of previous findings in diary surveys. In contrast, the estimates for food consumed in restaurants and other eating places actually exceed the estimates from the independent sources. These comparisons, however, are distorted to some extent by an apparent conceptual difference between the sources. The independent estimates cited to approximate "at-home" consumption actually relate to "off-premise" use, that is, food and beverages sold in stores and other places for consumption elsewhere. Although most of these purchases would be for home use, a significant percentage of such items as candy, snacks, soft drinks, and the like are bought for "off-premise" consumption outside the home.¹ In fact, the largest disparities between the survey and independent estimates of food for home use are precisely for the kinds of items just mentioned. It is not possible to estimate the effect of this conceptual difference with any precision, but a "ballpark" figure could place it as high as \$4 to \$6 billion, which (for greater comparability) should be subtracted from the "at-home" figures and added to the "purchased meals and snacks" totals in the independent estimates.

Even if allowance is made for this conceptual difference, the survey estimates for "at-home" consumption appear to be understated in relation to the independent estimates but by

¹Food and beverages purchased in "carry outs," fast-food outlets, or other places which double as eating and retail establishments would theoretically be included in purchased meals and snacks in the independent estimates. The conceptual difference discussed here would relate mainly to purchases in stores and other establishments which are not also eating places.

only a moderate margin—perhaps about 10 percent or so. At the same time, the estimates for purchased meals and snacks still hold up rather well in contrast to the experience in most previous surveys.² It is possible that the prominent positioning of the section on purchased meals on the diary form and special checks interviewers made for this expenditure class at the time diaries were picked up contributed to this favorable outcome.

The somewhat higher levels shown in table 3-1 for home food consumption based on the quarterly panel as opposed to the diary operation are typical of differences between global types of estimates and detailed inquiries in this sector. Although some effort is made to avoid this in the questioning, there is probably still a tendency in the global (quarterly panel) inquiry to include unintentionally some nonfood items, such as cleaning and paper products, customarily bought in conjunction with food purchases. There is also a general inclination toward exaggeration in global estimates of this kind, especially during periods of substantial price increases.

The vast differences shown in Table 1 for alcoholic beverages indicates the continued failure of household surveys to measure this sector.³ Apparently, the direct questions in the quarterly panel either were a bit more successful than the diary procedure in overcoming reporting inhibitions or merely reflected the exaggeration inherent in global estimates. A special effort to improve the diary reporting through additional probing at the time of collection resulted in only a modest improvement in the data (about 15 percent).

Detailed Comparisons

Despite some apparent understatement, the survey results would probably be adequate for most purposes and uses if reporting differences were reasonably uniform among the various food categories. Unfortunately, this does not appear to be the case. Of course, in making comparisons at more detailed levels, there is increasing uncertainty about the validity of the independent data as well. Therefore, the differences cannot be interpreted as precise measures and may be useful primarily to detect the existence of meaningful patterns.

Table 3-2 presents in some detail comparisons between the dairy-based results and Personal Consumption Expenditures (PCE) and Department of Agriculture data. In spite of the limitations cited above, certain logical relationships emerge from the comparisons. Generally speaking, it appears that certain perishable items likely to be consumed fairly promptly are more completely reported in the survey. In particular, meat and poultry expenditures exhibit a good deal of consistency among the

various sources. Also, the survey estimates for various other perishables, such as fresh milk and bread and other fresh-baked items, are relatively close to the comparable independent figures. On the other hand, there appears to be an appreciable understatement in the survey estimates for staples that may be kept for a long time, such as sugar, flour and macaroni products, canned or dry milk, mayonnaise and salad dressing, and gelatine desserts.

Some of the largest discrepancies of all occur for those items affected most by the conceptual difference discussed in the previous section, products usually purchased for "off-premise" use but frequently consumed outside the home. Thus, the survey estimates are artificially low in comparison to the independent figures for such items as candy and chewing gum, potato chips and snacks, crackers and cookies, soft drinks, and the like. There is no way of determining what the "real" differences would be for these products if this conceptual factor could be taken into account.

Aside from the conceptual issue, a possible explanation for the differentials shown in the table lies in the manner in which diaries may be maintained in many instances. Some studies have shown that, contrary to the wishes and hopes of survey operators, many people do not make entries promptly in their diaries.⁴ Instead, they may postpone their entries for a day or two, some possibly until the end of the week, when they realize the interviewer is about to call to pick up the records.⁵ When entries are made wholly or partially by recall, it is reasonable that those items actually used during the week, especially expensive products such as meat, which constitute the main course in the meal, would be remembered more completely. This should also hold for products used promptly and on a regular basis, such as milk and bread. In contrast, staple items, which go into the household inventory and are used slowly and in small quantities, could often be overlooked. Among other possible reasons for the differences is the fact that staple items may be more heavily consumed by low-income families who might have had greater difficulty in maintaining the diaries. Another, although less likely, possibility, is that some persons refrained from buying certain postponable items during the recordkeeping period.

Although there are some deviations, an examination of other data in the table lends support to the thesis that the differentials may be substantially attributable to problems of recollection. At first glance, the high survey ratios, relative to the independent estimates, for such items as canned fish and specialty items (spaghetti dinners, etc.) may be a bit perplexing, except when one remembers that these often may constitute the main course in a meal. Also, as a group, products used on a fairly

² The survey estimates for purchases of meals and snacks are probably somewhat overstated, because alcoholic drinks bought as part of a meal may not always have been separately identified by respondents.

³ The converse of the point made in footnote 3-2 is that the survey estimates for purchased alcoholic drinks are probably understated because of the inclusion by respondents of some such expenditures in the totals for purchased meals and snacks. The difference between the survey and the independent estimates for purchased alcoholic drinks, therefore, is probably exaggerated.

⁴ See, for example, G.G. Quackenbush, and J.D. Shaffer, "Collecting Food Purchase Data by Consumer Panel." *Technical Bulletin 279*, Michigan State University, Department of Agricultural Economics (undated).

⁵ In the 1972-73 survey, about 15 percent of the diaries were completely unfilled even at the time of pickup and had to be reconstructed entirely by interview.

regular or daily basis—such as breakfast cereals, eggs, cheese, butter and margarine, peanut butter, and jam—exhibit coverage ratios that exceed those for most staples by an appreciable margin. Even the generally higher percentages for fruits as compared to vegetables can be construed as consistent with the broad pattern. Since fruit products are usually consumed as separate courses in a meal or as separate snacks, whereas vegetables are customarily blended into or are subsidiary to a main course, it would not be surprising that the former might be more readily remembered. More regular use of some fruit products, particularly juices, could be another factor.

First vs. Second Week Diaries

One of the most persistent phenomena observed in diary operations is that a higher level of expenditures is reported in the earlier, as compared to the later stages of the recordkeeping period. For 2-week diary periods, this would indicate higher reporting in the first than in the second week. One hypothesis concerning such differences is that some element of telescoping is involved in the earlier stages. According to this theory, many people do not commence their diaries immediately but postpone the start for a day or two and reconstruct the earlier period from memory. In the course of reconstruction, they may include some purchases actually made prior to the starting date.

A countervailing theory is that respondents may be more conscientious about their recordkeeping at the outset but become weary of the process by the later stages. Even the possibility of

behaviorial changes has been suggested, with respondents altering their buying habits because of the requirement of record keeping.

Whatever the cause, the 1972-73 survey results clearly conform to expectations. For total food purchases, the "first-week" aggregates exceed those for the second week by around 10 percent. Moreover, the pattern persists for virtually every detailed food category, although the margin of difference varies a good deal from item to item.

Table 3-3 presents the ratio of first-week to second-week expenditures for major food categories. The differences among groups do not appear to follow any clear-cut pattern. There is, for example, no statistically significant correlation between these ratios and the coverage ratios in table 3-2. If there had been a negative correlation between the two, it could be concluded that the first week results not only were generally higher but also reduced the reporting differentials among the categories. However, this was not found to be the case for the available data.

Information will be available later and presented in a subsequent report on expenditure levels for each of the 14 individual days and various subperiods of the recordkeeping cycle. Those data should provide further insights into the reasons for the differentials and, hopefully, suggest various means of improving the estimation.

Table 3-1.—Aggregate Expenditures for Food and Beverages: Quarterly Panel and Diary Operation Compared to Independent Sources, 1972 and 1973
[Billions of dollars]

Year and source	Type of expenditure			
	Food and nonalcoholic beverages for home use	Purchased meals and snacks	Alcoholic beverages for home use	Purchased alcoholic drinks
1972				
Expenditure survey ¹				
Diary operation	\$84.4	\$31.7	\$5.8	\$1.6
Quarterly panel	91.2	23.3	6.2	2.9
Personal consumption expenditures (PCE)-GNP accounts	100.6	28.1	12.4	7.4
Economic research service (ERS)-Dept. of Agri.	98.6	(NA)	(NA)	(NA)
Census of business—merchandise line data	286.4	29.3	11.3	7.3
1973				
Expenditure survey ¹				
Diary operation	97.9	36.0	6.2	1.6
Quarterly panel	104.5	28.1	6.5	3.4
Personal consumption expenditures	112.8	31.8	13.1	8.1
Economic research service	111.1	(NA)	(NA)	(NA)

(NA) = not available.

¹These estimates are based on special reweighted tabulations from the original survey data tapes. They do not reflect editing changes which may have been made by the Bureau of Labor Statistics at later stages of processing and may, therefore, differ somewhat from estimates which have already or will subsequently be published by that agency. Quarterly panel estimates are for calendar years, diary-based estimates for fiscal years July 1972-June 1973 and July 1973-June 1974. Diary-based estimates have been increased to include food and beverage expenditures while on trips and vacations, as reported in a special inquiry made in the quarterly panel. Also included, for purposes of comparability with the independent sources, are expenditures for pet food.

²Omits sales by enterprises without paid employees, which would be substantial for seasonal produce stands, small bakeries and groceries, home deliveries by self-employed routemen, etc.

Note: Coefficients of variation for a single year's estimates from the diary operation are about 1-percent for food expenditures for home use, 2-percent for purchased meals and snacks, and 3-percent for alcoholic beverages for home use. Quarterly panel estimates for food for home use have less than a 1-percent coefficient of variation.

Table 3-2.—Aggregate Expenditures for Food and Nonalcoholic Beverages for Home Use, by Major Category:
Diary-Based Estimates Compared to Independent Sources, 1972

Product	Survey estimate ¹ (diary operation)		Ratio of survey estimate to:	
	Amount (millions of dollars) ²	Estimated coefficient of variation (percent)	Personal Consumption Expenditures (PCE) (GNP accounts) ³	Economic Research Service estimates (Dept. of Agriculture)
Meat (all types)	\$23,744.0	3.0	.970	1.020
Poultry	3,560.5	2.7	1.051	1.013
Canned fish	760.4	4.4	1.043	
Eggs	1,889.2	2.3	.801	.902
Dairy products	11,120.0	2.0	.892	.873
Fresh milk	6,310.0	2.3	.979	
Cream	263.5	6.4	.634	
Canned or dry milk	414.4	4.2	.639	
Butter	522.4	4.1	.932	
Cheese	2,187.7	2.5	.809	
Ice Cream	1,210.2	2.9	.856	
Other	220.6	5.7	.763	
Fruit				
Fresh	3,020.4	3.1		.841
Processed	1,244.8	2.9	.888	
Fruit juice				
Fresh or frozen	849.5	3.0	.871	
Canned or bottled	609.3	2.8	.931	
Vegetables				
Fresh	3,715.0	2.3		.724
Processed	2,455.0	2.6	.775	
Vegetable juice	123.0	7.5	.617	
Cereal products				
Breakfast cereals	1,030.5	3.5	.838	
Flour & mixes	707.3	3.7	.535	
Macaroni, spaghetti, etc.	299.5	5.0	.670	
Other (rice, cornmeal, etc.)	321.4	5.0	.653	
Bakery products	7,217.1	2.2	.764	
Bread & other fresh-baked (pies, cakes)	5,884.8	2.2	.977	
Crackers and cookies	1,332.3	2.6	.541	
Fats and oils				
Margarine	628.3	3.2	1.088	
Mayonnaise & salad dressing	451.7	3.6	.671	
Shortening & oil	497.9	3.6	.681	
Peanut butter	263.6	5.0	.878	
Jams & jellies	253.5	4.3	.850	
Sugar	602.2	3.6	.703	
Candy & chewing gum	1,201.3	3.1	.318	
Beverages				
Coffee	1,718.6	3.0	.761	
Tea	357.4	5.0	.775	
Carbonated drinks	3,458.5	2.6	.598	
Frozen dinners & pies	1,096.4	2.8	.697	
Gelatine & other desserts	183.3	5.0	.535	
Potato Chips & snacks	793.6	3.2	.595	
Canned specialties (foreign foods, soups, etc.)	1,443.3	2.7	1.193	
Baby foods	410.2	3.6	.754	
Pickles and relishes	250.6	4.1	.630	
Catsup & sauces	613.7	3.3	.809	

¹Based on diaries for period July 1972-June 1973. Some categories are excluded because comparative data could not be developed in that detail. Unlike Table 3-1, no adjustment is made for food purchases while on trips and vacations since that information was not available in item detail.

²Includes a uniform allocation for reported expenditures where the product category was unknown or where the categories were combined. These amounted to about 4-percent of all food expenditures.

³PCE estimates for 1972 were projected by the author from detailed PCE data for 1967 using Census of Manufactures and Foreign Trade data for 1967 and 1972 (see appendix A).

Table 3-3.—Ratio of First Week to Second Week Reported Expenditures for Food and Beverages, by Major Category:
Diary Operation, 1972-73

Product	Ratio: 1st to 2nd week	Product	Ratio: 1st to 2nd week
Total, food and nonalcoholic beverages for home use	1.095	Bakery products	1.065
Meat (all types)	1.069	Bread and other fresh baked crackers and cookies	1.069
Poultry	1.122	Fats and oils	
Canned fish	1.040	Margarine	1.104
Eggs	1.120	Mayonnaise & salad dressing	1.120
Dairy products	1.074	Shortening and oil	1.115
Fresh milk	1.067	Peanut butter	1.115
Cream	1.060	Jams and jellies	1.087
Canned or dry milk	1.121	Sugar	1.093
Butter	1.098	Candy and chewing gum	1.050
Cheese	1.095	Nonalcoholic beverages	
Ice cream	1.041	Coffee	1.121
Fruit		Tea	1.041
Fresh	1.099	Carbonated drinks	1.140
Processed	1.130	Frozen dinners and pies	1.051
Fruit juice	1.091	Gelatine & other desserts	1.012
Vegetables		Potato chips and snacks	1.043
Fresh	1.126	Canned specialties (foreign foods, etc.)	1.043
Processed	1.102	Baby foods	1.076
Vegetable juice	1.041	Pickles and relishes977
Cereal products		Catsup and sauces	1.047
Breakfast cereals	1.075	Purchased meals and snacks	1.053
Other (flour, macaroni, rice, etc.)	1.115	Alcoholic beverages, home use	1.104
		Purchased alcoholic drinks	1.037

CHAPTER 4

Small Nonfood Expenditures

This chapter deals with expenditures which are relatively small in terms of unit costs but which aggregated to some \$60 billion or more a year at the time of the survey. They include laundry and cleaning products, toiletries, drugs and medicines, tobacco products, recreational items, and a variety of services. The intention in the 1972-73 survey was to depend principally on the diary operation for these expenditures. However, partly for checking purposes but also to provide some aggregate estimates for individual families, several categories were covered in summary form either on a quarterly basis or once during the annual cycle in the quarterly panel.

Comparisons With Independent Data

Comparisons are presented in table 4-1 between the survey results from the diary operation and results from various independent sources of data on small nonfood expenditures. The independent sources used for this purpose are the Personal Consumption Expenditures (PCE) estimates, already described, and estimates from the 1972 Census of Selected Service Industries. Attention is again directed to the caveats expressed previously concerning the uncertainties about the accuracy and precise comparability of the independent data.

As the table shows, the survey estimates appear to be appreciably understated in relation to the independent data except in a relatively few instances, but the differences range over a wide spectrum. Some comprehensible patterns emerge from the comparisons, however. Although there are exceptions, it appears that expenditures likely to be made in the main by the homemaker—who would also be the recordkeeper for the diary operation in most cases—are more completely reported. This also seems to be true for expenditures that may occur on a more or less regular basis. On the other hand, those expenditures likely to be made by other family members or on an irregular basis exhibit relatively large differences.

Starting with the product categories, the coverage ratios (ratios of the survey to the independent estimates) are appreciably higher for household supplies and paper products—items usually purchased by the homemaker—than for personal care preparations (toiletries), which may be bought by almost any family member. Furthermore, among the toiletries, one of the lowest ratios is for shaving preparations, presumably purchased mainly by the male members. The ratio is also quite low for the residual “other” category which includes perfumes, toilet water, and similar items often bought as gifts. This residual group also includes several items, such as deodorants and depilatories, which

some people may feel sensitive about reporting. An element of sensitivity could also have affected the residual group under hair preparations, which includes hair coloring and rinses, and the reporting of certain kinds of cosmetics.

Although household supplies appeared to be more adequately reported than some other items, the disparities were generally larger than those exhibited for food products, probably, in part, because of the much greater amount of space and specification accorded the latter on the diary record. In addition, a single purchase of household supplies could last a considerable time and might, therefore, be subject to some of the same reporting problems affecting staple food products, as discussed in Chapter 3.

One of the surprises was the very close correspondence between the survey and independent estimates for drug preparations, whether obtained on prescription or over the counter. Both the homemaker's role in family health matters and regularity of purchase of various of these items could have affected this outcome. Before too much credence is given to this result, however, it should be mentioned that independent estimates for this category were especially difficult to develop, and considerable uncertainty attaches to those presented. This is one reason that drugs are not itemized in the comparisons.

The results vary a good deal for the other products covered. The exceptionally high ratio for pet food may affirm that people are more aware of their indulgences on behalf of their pets than of their own. The low figure for film purchases probably reflects the fact these often may be made spontaneously and by almost any family member.¹ Similar purchase patterns may have contributed to the large disparities for reading materials and toys and games. On the other hand, the high ratio for records and tapes represents something of a contradiction. Perhaps decibel levels tend to make the homemaker aware of recordings bought by the teenagers. Nearly every previous study has found the substantial understatement in tobacco expenditures exhibited here, which is usually attributed to sensitivity about reporting a less socially acceptable expenditure (especially these days) as well as the proliferation of purchases among the various family members.

Reported expenditures for services follow a generally similar pattern. The survey figure for paid household help, expenditures

¹In addition, as indicated earlier, diaries were not maintained while people were away on trips and vacations, and photography, of course, reaches a peak on such occasions.

usually controlled by the homemaker, actually exceeded what is probably a rather weak independent estimate. Likewise, one of the higher coverage ratios was exhibited for laundry and dry cleaning, also mainly the focus of the homemaker. Interestingly, the ratio for dry cleaning, where other members are more likely to take some responsibility for their own clothes, was lower than that for laundry, where the responsibility may be more concentrated. Another factor may be the greater regularity of laundry service as compared to dry cleaning.

At the same time, the coverage ratios drop sharply for service categories in which individuals are more likely to make their own expenditures. Examples are hair and beauty care, small repairs, and sport and theater admissions. The higher ratios for movies and bowling could reflect the greater regularity of these activities and/or more participation on a family basis.

Aside from some of the possible explanations (or rationalizations) given for differential reporting, another factor may be whether or not particular items are cited as examples to respondents for purposes of filling the forms. Although the pattern is irregular, there appears to be some tendency for categories cited as examples to have higher completion rates. This especially could have affected cases in which the diary had to be filled by recall and examples were read aloud by interviewers.

Diary vs. Quarterly Panel Results

As mentioned earlier, limited information on small expenditures was obtained as part of the quarterly panel interviews. For a few items (e.g., film, records, admissions to recreational activities, etc.), information on aggregate expenditures was solicited each quarter. For certain other categories (laundry and dry cleaning, hair care, tobacco products, etc.), an inquiry was made once during the annual cycle on the frequency with which such expenditures were made and the usual cost per occasion, thereby providing some ingredients for projecting yearly totals. One purpose of the questions was to provide some aggregates for individual families for items of this kind for use in constructing individual annual accounts for analytical studies of consumer behavior. Such information could not be obtained from the diary operation where individual families were covered only for 2-week periods. The information from the quarterly panel was also regarded as a possible check on the diary-based estimates of aggregates and averages.

Table 4-2 presents the quarterly panel and the diary estimates of average annual expenditures for those categories for which comparisons are possible. The quarterly panel results seem to be

considerably exaggerated for those categories in which the diary estimates corresponded reasonably closely with the independent data (laundry and dry cleaning and records and tapes). For another category, hair care, where the diary figure may be understated by 30 percent or so, the interview panel estimate appears to be sharply overstated (70 percent or more) in comparison with the independent sources.² On the other hand, the quarterly panel estimate is slightly closer to the independent figure for tobacco products and markedly so for what is perhaps the weakest of the diary estimates, film purchases.

One category of small expenditures where a detailed inquiry was made in the quarterly panel was for household help. In this case, detailed questions were asked each quarter about expenditures for different categories of domestic and other help—housecleaning, babysitting, yard work, etc. The estimates for household help derived from the interview panel were almost identical to those from the diary operation, with both slightly exceeding the PCE estimate for this category. This similarity suggests that this is one inquiry which could be omitted from the quarterly interview in future studies.

First- vs. Second-Week Diaries

There was considerable discussion in the previous chapter—which will not be repeated here—on the various theories concerning the characteristically higher expenditure levels reported in the first as compared to the second week of diary keeping. The small expenditure items covered in the present report appear to exhibit an especially large tendency in this direction. Table 4-3 presents the ratios of first- to second-week expenditures for these items. The overall ratio for small expenditures (1.12) covered in this report exceeds that for food purchases for home use (1.095) and the dispersion of the individual ratios appears to be somewhat greater.

As in the case for food, there is no ready explanation for the differences among the ratios in table 4-3. A category for which the survey and independent estimates were close, such as household help, shows virtually no difference between first- and second-week expenditures (ratio of 1.00). However, another category that also compared favorably with the independent estimates—drug products—exhibits one of the highest first-second week ratios (1.24). Similar disparities are evident for categories in which the survey estimates deviated a good deal from the independent data.

² Independent estimates could, however, be understated in a sector dominated by small operators.

Table 4-1.—Diary-Based Estimates of Small Nonfood Expenditures Compared to Independent Data Sources: 1972

Category	Diary-based estimates		Ratio of diary-based estimates to:	
	Amount (millions of dollars) ¹	Estimated coefficient of variation (percent) ²	Personal Consumption Expenditures (PCE) (GNP accounts) ³	Estimates from 1972 Census of Selected Service Industries
Products				
Laundry and cleaning supplies	\$3,449.8	2.5	.780	
Soaps and detergents	1,832.4	3.0	.775	
Laundry supplies	563.6	5.0	.756	
Cleaning and other supplies	1,053.8	4.0	.811	
Paper products	1,358.9	3.5	.719	
Light bulbs	326.6	6.0	.959	
Personal care preparations	3,522.9	2.5	.533	
Toilet soap	315.5	5.5	.764	
Cosmetics	621.2	4.5	.594	
Dental preparations	537.4	4.5	.760	
Tooth paste	301.6	5.5	.701	
Other	235.8	6.0	.851	
Hair preparations	909.1	3.0	.587	
Shampoos	353.6	5.0	.748	
Sprays	223.2	6.0	.672	
Other	332.3	5.0	.447	
Shaving preparations	134.1	9.0	.366	
Other preparations	1,005.6	3.0	.438	
Drugs and medicines	7,238.0	5.0	1.020	
Prescription drugs	4,696.2	5.5	1.032	
Nonprescription drugs	2,541.8	5.0	.998	
Pet food	1,810.4	3.0	.967	
Tobacco products	7,651.3	2.5	.627	
Cigarettes	6,759.2	2.5	.628	
Other	892.1	4.5	.618	
Reading materials including textbooks*	4,969.2	2.5	.629	
Records and tapes	774.7	6.0	.963	
Film	348.9	#	.333	
Toys and games	2,153.2	5.0	.583	
Services				
Laundry and dry cleaning	\$3,328.2	3.0	.935	.917
Laundry service and expense	1,475.9	4.5		1.164
Dry cleaning	1,683.2	4.5		.790
Dlaper service	63.9	#		1.041
Rug and carpet cleaning	105.1	#		.613
Paid household help*	6,256.2	3.0	1.165	
Barber and beauty shop expenses**	2,663.4	3.5	.671	.674
Repair services*				
Clothing repair and alteration*	165.9	#	.373	
Shoe repair*	166.6	#	.401	
Watch and jewelry repair*	131.9	#	.206	
Admission charges**				
Motion picture theaters	1,548.2	4.0	.908	.793
Legitimate theaters and concerts	467.5	#	.740	
Sports events	529.5	#	.435	
Bowling Alleys	858.1	5.0	1.033	.728

*1972-73 averages.

**Survey estimates are 1972-73 averages and ratios of survey to PCE estimates based on both years. However, ratios of survey to 1972 Census of Service Industry estimates based on 1972 data only.

#Not available but probably quite large, 10 to 15 percent or more.

¹These estimates are based on special reweighted tabulations from the original survey data tapes. They do not reflect editing changes which may have been made by the Bureau of Labor Statistics at later stages of processing and may, therefore, differ somewhat from estimates which have already or will subsequently be published by the agency.²Rounded preliminary estimates.³For most detailed products, PCE estimates for 1972 used in computing these ratios were projected by the author from detailed PCE data for 1967 using Census of Manufactures production data and census foreign trade data for 1967 and 1972 (see appendix A).⁴PCE estimates used as a base in computing the ratio include clock repairs.

**Table 4-2.—Average Annual Expenditures per Consumer Unit for Small Items:
Diary Operation Compared to Quarterly Panel, 1972-73**

Category	Diary-based estimates		Quarterly panel estimates	
	Amount (dollars)	Estimated coefficient of variation (percent) ¹	Amount (dollars)	Estimated coefficient of variation (percent) ¹
Film and development	\$8.95	*	\$22.23	1.5
Records and tapes	10.65	*	20.16	1.5
Tobacco products	108.81	1.5	129.55	1.0
Cigarettes	97.85		118.51	
Other	10.96		11.04	
Laundry service and expense	21.27	2.5	31.45	1.5
Dry cleaning	23.64	2.5	54.68	1.5
Hair care	37.13	2.5	94.46	2.0

*Not available but probably 2 to 3 times as large as the coefficients for the quarterly panel.

¹Rounded preliminary estimates.

**Table 4-3.—Ratio of First-Week to Second-Week Expenditures
for Small Items Reported in the Diary Operation: 1972-73**

Category	Ratio: 1st to 2nd week	Category	Ratio: 1st to 2nd week
Total—All Items	1.12		
Products		Services	
Laundry and cleaning supplies	1.13	Laundry and dry cleaning	1.10
Paper products	1.11	Paid household help	1.00
Personal care preparations	1.09	Barber and beauty shop expenses	1.12
Drugs and medicines	1.24	Admission charges	
Prescription drugs	1.25	Motion picture theaters	1.06
Nonprescription drugs	1.20	Legitimate theaters	1.17
Reading materials	1.09	Sports events	1.01
Tobacco products	1.08	Bowling alleys	1.02
Film	1.30		
Records and tapes	1.06		

CHAPTER 5

Clothing Expenditures

The measurement of expenditures for clothing and footwear was, and continues to be, one of the more troublesome sectors from the standpoint of deciding on the most effective approach. The category consists of a wide range of items, some rather costly and purchased infrequently, others relatively inexpensive but purchased at varying frequencies. After some initial testing, it was decided to cover all clothing expenditures, including minor items, in the quarterly panel in the 1972-73 survey. It was feared that restricting the inquiry to any specific subgroups might result in serious omissions. Furthermore, the questioning for all clothing items was conducted each quarter, because a longer recall period was deemed undesirable for many of the smaller items and the use of a standard time frame for the entire category simplified field procedures. As for other categories, however, all clothing expenditures are also covered in the diary operation so that broad comparisons of the two approaches are possible and various options remain, even after the fact, for purposes of deriving estimates.

Diary vs. Quarterly Results

A comparison of clothing expenditures estimated from the quarterly panel and from the diary operation reveals relatively little overall difference between the two sources (table 5-1). The general similarity in the estimates is surprising, in one sense, because so much greater attention was focused on this commodity class in the quarterly panel. Some 16 broad clothing categories were probed each quarter in the interview panel, using detailed item checklists for each. In contrast, only a small section was provided in the diary operation for recording clothing expenditures, and even that space was inadvertently located in an especially inconspicuous position on the form.

As shown in table 5-1, the similarity at the aggregate level conceals some rather large disparities in various clothing categories. The data are difficult to assess because of the existence of a large residual category in the diary distribution, constituting almost 15 percent of the total. In the main, this category reflects entries in which the type of clothing was not specified or where there was insufficient detail for coding purposes. The limited space for making entries and perhaps inadequate attention to incomplete entries on the part of interviewers picking up the records undoubtedly contributed to this problem. Very few unclassifiable entries were found in the more structured situation in the quarterly phase.

Even making a reasonable allowance for this residual group, it is unlikely that the gap between the two sets of estimates

could be closed for certain specific categories. In particular, the quarterly panel estimates for one of the more expensive clothing groups—suits and tailored jackets—are far in excess of the comparable diary-based averages. As will be discussed later, this difference probably indicates that the quarterly panel was generally more successful in measuring large than small items of expenditure. The comparatively low diary estimates for certain of the smaller items—especially underwear and hosiery—are less understandable; but the fact that a single respondent, usually the housewife, maintained the record for the entire family might have contributed to this outcome. It is likely that certain small purchases, in particular, could be made by individual family members without immediately coming to the attention of the recordkeeper. Since a single respondent was generally used for the quarterly interviews as well, a similar problem would exist. However, there would probably be more opportunity in the quarterly panel for the respondent to become aware of such purchases (through receipt of bills, observing the items, etc.).

A reversal is evident in the case of the heterogeneous "accessories" category where the diary results are appreciably higher. Actually, more detailed data (not shown here) reveals relatively little difference for those accessory items specifically listed on the quarterly form—hats, gloves, handbags, and wallets. Most of the disparity was found in the miscellaneous "other accessories" category, where many respondents might have difficulty in even knowing which items to include.¹

There is no ready explanation for the higher diary-based average for footwear. Since this category was probed in some detail in the quarterly interviews, with no special attention in the diary procedure, the opposite relationship would be expected. The rather arbitrary allocation of "unknowns" in the table introduces too much uncertainty to assess the significance, if any, of the resultant higher diary estimates for various other categories, such as dresses and shirts.²

¹Some evidence of this effect is given by a small change in the quarterly questionnaire between 1972 and 1973. An important subcategory, neckties, was not specifically listed on the 1972 form but was added in 1973. As a consequence, the quarterly panel estimates for "other accessories" (including neckties) rose appreciably between 1972 and 1973, whereas no such change was indicated by the diary estimates. This may reinforce the notion cited in chapter 4 that items cited on the forms as examples or included as illustrations may have a greater likelihood of being reported.

²None of the "unknowns" was allocated to the footwear category.

Comparisons With Independent Data

A comparison of the survey estimates—whether from the quarterly panel or the diary—with various independent data indicates the likelihood that the level of clothing expenditures was appreciably understated. Moreover, the differences do not appear to be uniform among the various categories of clothing, with the survey estimates holding up rather well for large, infrequently purchased items but falling short for most other classes and by varying margins. For certain important uses where the distribution, rather than the level, of expenditures is the focus, differential reporting of this kind would present obvious difficulties.

Overall comparisons of the survey statistics with independent data for these years from the Personal Consumption Expenditures (PCE) component of the Gross National Product accounts and from merchandise line data from the 1972 Census of Business are presented in table 5-2. Comparisons for broad clothing groups are contained in table 5-3,³ in this case also adding consumer panel data from the Market Research Corporation of America (MRCA) adjusted to client production and sales levels. In spite of the uncertainties about these sources, further amplified in the appendix, their general consistency, especially their persistent excess over the survey levels, lends credence to the judgment made above.

Table 5-2 confirms that the survey estimates are markedly lower than the corresponding independent estimates, with the differences more striking when comparisons are made with the PCE data than with the Census of Business figures. The Census levels are probably understated slightly by possible omission from that universe of certain wholesale establishments and transitory vendors who sell clothing to consumers. At the same time, the PCE estimates are not yet finally adjusted to the latest production benchmarks and have often been reduced, sometimes substantially, in this sector when that occurs. A figure somewhere between the two may represent the best standard. Moreover, the survey estimates shown may not fully reflect sales taxes, the inclusion of which would reduce the gap by a few points. Even at best, however, there appears to be a deficiency in the overall survey levels on the order of 20 to 25 percent or more. The difference for footwear, however, would be smaller if the diary estimates are used.

As indicated by the more detailed comparisons in table 5-3, the survey estimates equal, or possibly exceed, the independent levels for the major category of coats and suits. This group, of course, embraces the most costly items and—since they are purchased less frequently—are likely to be more readily recalled as individual transactions in a retrospective interview. The largest disparity is observed, not unexpectedly, in the diffuse “accessories” group, which consists of a variety of small, unrelated items not as likely to be remembered. The lack of a more comprehensive list of accessories on the quarterly form, previously mentioned, probably accentuated the difference.

³ The quarterly rather than the diary estimates are used for this purpose, since the category detail in the latter is obscured by the large residual group mentioned earlier.

Understatements of various degrees are apparent for most of the other groups. The large difference for a small-item category, such as underwear, is understandable on the basis of memory biases. However, the lowest cost category of all—hosiery—exhibited relatively little disparity. It is possible that regularity of purchase, which may exist to a greater degree for this group than for others, operated as a memory aid. Various theories could be propounded concerning the other differences, but this would hardly be warranted in view of the sampling errors and uncertainties about the independent estimates and even the precise classification of items.⁴

The general understatement of clothing expenditures in the survey can be attributed to a variety of causes, but two most readily come to mind. First, it seems likely that even a 3-month recall period was too long to obtain a complete recollection of purchases of many, if not most, of the item categories in this sector. Again, the fact that only one respondent was interviewed for the entire family might have contributed to the problem. Second, the quarterly interview was extremely long—averaging 1½ to 3 hours or more per family—and covered a wide range of subjects. It is likely, under these circumstances, that many expenditure fields did not receive the attention needed to elicit complete responses.

Alternative Time Periods

Table 5-4 provides some indication of the effect of using shorter recall periods in inquiring about clothing expenditures. For comparison with the original quarterly panel data (based on 3-month recall periods), estimates are provided which are derived from reported expenditures in only the most recent (final) month of each 3-month period. Since the quarterly panel was divided into three equal subpanels, each operating on a different quarterly cycle,⁵ the alternate estimates cover all calendar months of the year and are unbiased from the standpoint of seasonal variation. Caution is necessary in assessing this alternative because of the possibility of “telescoping” within quarterly periods, that is, the tendency in retrospective interviews to report as having occurred in the most recent part of a given period an event which actually took place earlier. In the present situation, this would mean that estimates based on purchases reported for the most recent months of any recall period could be higher than those for earlier months, without necessarily indicating an improvement in precision of reporting. The quarterly estimates themselves should be relatively unaffected by this phenomenon because of the provision for “bounding” in the basic operation. For that purpose, the interviewers always had information in their possession on purchases reported in prior quarters, so that a repetition in the current quarter of items reported previously could be detected and disregarded.

Even allowing for these limitations, the data in table 5-4 provide some interesting insights into possible means of reducing the

⁴ For example, there were probably some problems in distinguishing between tailored and untailored jackets, and these problems could have affected the margins shown for the first two categories in the table.

⁵ See chapter 1 for a discussion of this arrangement.

reporting problems in clothing expenditures. First of all, the estimates based on the "final month" purchases for the larger items—coats and suits—clearly exceed the levels suggested by the independent data. Although these large items apparently were not understated, even for the original quarterly periods, they are the types of products that are particularly subject to telescoping if a short, open-ended time reference is used. A reduction in the recall period for such items, without an accompanying effort to "bound" that period, probably would result in a considerable overstatement in reporting.

The implications for the other groups might be rather different. In many of the cases, the ratios between the "final month" estimates and the corresponding independent levels now fall within a fairly narrow range, around unity (90 to 110 percent). Considering sampling errors and uncertainties concerning the independent estimates, differences of that magnitude can be largely discounted. Moreover, the residual differences for two additional categories—footwear and untailored jackets—may still be exaggerated, the former due to possible overstatement in the independent estimate and the latter because of classification problems. In that event, the only really striking deficiencies which remain would be for underwear and accessories.

Obviously, at least part of the apparent improvement resulting from the shortened reference period is a consequence of telescoping, itself a form of response error. However, the opposite type of error—omissions due to incomplete recollection—would unquestionably be smaller for the 1-month period. Actually, most surveys, whatever their nature, are subject to offsetting errors of overstatement and omission, which operate in much the same manner as a sampling variance and are usually reflected

in the computations of sampling error.⁶ Since there are undoubtedly still some omissions even for the shorter reference period, the 1-month estimates—telescoping or no (and especially if the most obvious instances are controlled), likely represent the more accurate levels.⁷

Some alternatives in timing are also possible for the diary-based statistics as a result of the difference between the accuracy of first-week and second-week reporting. For clothing expenditures, estimates based on only the first week of diarykeeping would have been about 4 percent higher than those derived from the entire sample. The difference happened to be especially large for accessories, whereby the aggregate based on "first-week" diaries would be boosted to about 80 percent of the independent estimate.

On balance, the most accurate estimate of clothing expenditures from the available 1972-73 results might be obtained from a composite of data from the two survey sources and the various optional time periods. Using the independent estimates as a yardstick, the closest survey aggregates would be derived by using the regular quarterly estimates for coats, suits, and perhaps a few other larger items; the data on purchases in the "final" month of each quarter for most other items, and the "first week" diary estimates for clothing accessories. Even on that basis, however, a deficiency of some magnitude would likely remain.

⁶See Hansen, Hurwitz, and Madow, *Sample Survey Methods and Theory*, New York, John Wiley and Sons, 1953, Volume 1, pg. 91.

⁷Of course, in the 1972-73 data, the 1-month estimates have larger sampling variances; but the mean square errors (combining the effects of sampling errors and response biases) would apparently be smaller.

Table 5-1.—Annual Average Expenditures per Consumer Unit for Clothing and Footwear:
Quarterly Panel and Diary Operation, 1972-73¹

Category	Quarterly panel		Diary operation			Ratio: adjusted diary to quarterly panel estimates
	Amount (dollars)	Estimated coefficient of variation (percent) ²	Amount (dollars)		Estimated coefficient of variation (percent) ³	
			Original estimates	Estimates adjusted proportionately to distribute amount for clothing type not specified		
Clothing—Total	\$466.56	0.8	\$471.63	\$471.63	2.0	1.01
Coats	37.07	2.2	30.23	35.33	6.0	.95
Suits and tailored jackets	77.34	1.3	56.39	65.89	4.0	.85
Untailored jackets and sweaters	29.79	2.0	28.74	33.58	6.0	1.13
Dresses and skirts	58.97	1.3	58.36	68.20	4.0	1.16
Trousers and slacks	81.76	0.8	69.85	81.62	2.5	1.00
Shirts and blouses	58.91	0.9	60.01	70.13	3.0	1.19
Underwear	27.93	0.8	19.64	22.95	2.5	.82
Nightwear	17.43	1.2	14.90	17.41	3.5	1.00
Hosiery	28.47	0.9	17.33	20.25	3.0	.71
Special clothing (swimwear, uniforms, etc.)	11.95	1.8	9.05	10.58	5.0	.89
Hats, gloves, and accessories	19.35	1.2	25.48	29.77	3.5	1.54
Infant clothing	17.59	4.2	13.63	15.93	7.5	.91
Clothing type not specified			68.03			
Footwear—Total	85.32	0.7	94.63	94.63 ³	3.0	1.11

¹These data are derived from reweighted original data tapes and do not incorporate editing changes which may have been made by BLS at later stages of processing. The estimates, therefore, may differ somewhat from those already published or to be published by that agency. Whereas quarterly panel data are for calendar years, diary estimates are for fiscal years, July 1972-June 1974.

²Preliminary.

³No adjustment for footwear.

Table 5-2.—Aggregate Expenditures for Clothing and Footwear:
Quarterly Panel and Diary Operation Compared to Independent Data Sources, 1972 and 1973
[Billions of dollars]

Source	1972		1973	
	Clothing	Footwear	Clothing	Footwear
Survey estimates ¹				
Quarterly panel	\$30.9	\$5.7	\$34.3	\$6.2
Diary operation	31.6	6.7	34.1	6.9
Personal Consumption Expenditures (PCE) —				
(Gross National Product accounts)	45.2	8.9	50.3	10.0
Census of Business Merchandise line data	40.9	7.7	(NA)	(NA)

(NA) = Not available.

¹Survey estimates may or may not include sales taxes which are explicitly included in the independent estimates. Thus, the actual differences might be a few percentage points smaller than indicated.

Note.—Coefficients of variation of quarterly panel estimates for a single year are about 1 percent both for clothing and footwear. For the diary operation, the comparable coefficients are about 3 percent for clothing and 4 percent for footwear.

Table 5-3.—Aggregate Estimates of Clothing Expenditures, by Major Category:
Quarterly Panel Compared to Independent Data Sources, 1972 and 1973
[Millions of dollars]

Category	Quarterly panel estimates		Ratio of quarterly panel estimates to:	
	1972	1973	Personal Consumption Expenditures (GNP accounts) 1972 ¹	Adjusted Nat'l Consumer Panel Data (Market Research Corporation of America) 1973 ²
Coats, suits, and tailored jackets	\$7,427.1	\$8,547.8	1.08	1.28
Untailored jackets and sweaters	1,824.4	2,335.2	.63	.71
Dresses and skirts	4,203.5	4,030.7	.71	.76
Trousers and Slacks	5,319.8	6,096.6	.84	.95
Shirts and blouses	3,787.1	4,438.1	.68	.78
Underwear	1,937.4	1,961.8	.59	.61
Nightwear	1,151.2	1,287.6	.71	.83
Hosiery	2,020.0	1,954.5	.88	.93
Hats, gloves, and accessories	1,276.4	1,426.1	.52	(NA)

(NA) = Not available.

¹Projected by author from 1967 PCE estimates, using Census of Manufactures and census foreign trade statistics for 1967 and 1972 (see appendix A).

²Computed from basic panel data using adjustment factors supplied by MRCA (see appendix A).

Note.—All proportions in last two columns differ significantly from unity.

Table 5-4.—Aggregate Expenditures for Clothing and Footwear: Quarterly Panel Estimates Based on Data for
All Months and on Reported Purchases in Final Month of Each 3-Month Period, Compared to Independent Data
Sources, 1972-1973.

[Millions of dollars]

Category	Quarterly panel estimates		Ratio of quarterly panel estimates to independent estimates ¹ for:	
	Based on data for all months	Based on reported purchases in final month of each 3-month period	Data for all months from panel	"Final month" data from panel
Clothing—total ²	\$32,575.3	\$38,613.9	.68	.81
Coats, suits, and tailored jackets	7,987.7	9,138.5	1.20	1.37
Untailored jackets and sweaters	2,080.0	2,353.9	.67	.76
Dresses and skirts	4,117.1	4,987.7	.73	.89
Trousers and slacks	5,708.2	7,044.5	.90	1.11
Shirts and blouses	4,112.6	5,121.6	.73	.91
Underwear	1,949.6	2,338.0	.60	.72
Nightwear	1,219.4	1,473.6	.77	.93
Hosiery	1,987.3	2,325.4	.85	1.08
Hats, gloves, and accessories	1,351.3	1,638.2	.53	.64
Footwear—total	5,959.9	7,313.7	.63	.77

¹For total clothing and footwear, independent estimates used for comparison are average of Personal Consumption Expenditures (PCE) estimates for 1972 and 1973.

For clothing categories, independent estimates are average of PCE estimates for 1972 and National Consumer Panel (MRCA) data for 1973 which were used in Table 5-3.

²Detail will not add to total because certain categories are omitted for which comparisons could not be made.

³Independent estimate used for both years was PCE estimates for 1972.

CHAPTER 6

Expenditures for Major and Minor Appliances and Equipment

This chapter deals with a wide range of household appliances and equipment, including both large and costly products, such as refrigerators, washing machines, and television sets, and small, relatively inexpensive products, such as toasters, radios, and fans. Although altogether they account for only a small proportion of total consumer expenditures—some \$15 to \$20 billion at the time of the survey—purchases of these items appear to be particularly affected by cyclical fluctuations in economic activity and are, therefore, valuable indicators in studying economic trends.

Because particular appliances are purchased infrequently by individual families, sampling variances are relatively large compared to those for other kinds of expenditures. For this reason, the quarterly panel—in which a full year's experience is obtained for each family—was regarded as more realistic for this information than the diary operation, in which only two weeks' coverage is obtained for any one respondent. A special procedure known as the "inventory" approach, which was discussed in Chapter 1, was used for this purpose in the interview panel. Instead of inquiring directly about expenditures for a given period, respondents were asked at the first interview about possession of the articles in question. If any such items were present, the date of acquisition was determined and, if within the previous year, the cost and a variety of other characteristics were recorded. This inventory was updated at subsequent visits with inquiries about any new acquisitions either for the respondents' own use or as gifts for persons outside the family. The updating was done only once, at the end of the annual cycle, for major appliances. It was carried out twice, at semiannual intervals, for small appliances.

No special procedures were followed for this class of expenditures in the diary operation. Because of the higher priority accorded other categories, appliances were not specifically mentioned on the diary form but were relegated to various catchall sections.

Comparisons With Independent Estimates

Previous efforts to measure purchases of and expenditures for appliances and other durable commodities of that type have met with mixed success. Because of the importance and cost of many of these products, respondents tend to remember purchases fairly completely for reasonable recall periods. However, there is also a considerable tendency for respondents to

"telescope" expenditures that actually occurred in a prior period. This problem was controlled in the present survey by using the "bounding" procedure.

One of the problems in appraising the survey results is that much of the available independent data, whether from Government surveys or market research, are based on open-ended interviews and are subject to telescoping of this kind. It was decided, therefore, to depend principally in evaluating the survey results on estimates from the Personal Consumption Expenditures (PCE) derived from the Gross National Product accounts. However, in order to obtain estimates in sufficient detail for the survey date, it was necessary for the author to update the PCE data from 1967 to 1972, using the method described in appendix A. In addition, an adjustment had to be made in each category to reflect appliances included as part of home purchases. The resultant estimates, therefore, can be considered only very rough approximations of level.

A comparison of the survey data from the quarterly panel with the corresponding PCE estimates is presented in table 6-1 for new appliance expenditures. Two different methods were used to develop estimates from the survey results. To understand these methods, it will be necessary to elaborate a bit further on the survey procedure. When the initial "inventory" was obtained, items on hand were differentiated into two categories—those which had been purchased by the family for its own use (including those included as part of a home purchase) and those the family had received as gifts from persons outside the household. As the inventory was updated during the course of the survey year (at semiannual intervals for small appliances, annually for the major ones), newly acquired items were differentiated into the same two classes. In addition, questions were asked each time about appliances the family may have purchased as gifts to be given to persons outside the household. This was done because it was believed that the most accurate expenditure estimates could be derived from purchases actually made by the family—whether for their own use or as gifts for others—because the family could more accurately report the prices paid. This combination of procedures is the basis for the first set of estimates (method 1) in table 6-1.

It is evident, however, that an expenditure estimate can also be made by combining purchases made by the family for its own use and the value of gifts they received from others. This combination is shown as the second set of estimates (method 2) in table 6-1. The problem is that the value of gifts received

cannot always be reported by respondents since price tags are obviously removed in advance in most cases. In fact, it was necessary to impute the value at the data-processing stage for about 15-20 percent of items reportedly received as gifts, whereas this was a negligible problem for those actually purchased by the family.

Of course, since gifts received from others and gifts given to others are merely different measures of the same thing, the two estimates should theoretically be identical. The fact that they differ in some instances reflects a rather interesting reporting phenomenon. For nearly every appliance class, the estimated value of gifts received from persons outside the household—which was derived from the inventory of items on hand at the time of interview—exceeded the estimated expenditures reported by the family for gifts given to persons outside the household, which was based on their recall of purchases made during the reference period. This appears to substantiate the notion that the inventory approach used in the survey provides a more complete reporting of acquisitions than the customary technique of asking persons retrospectively about their expenditures for a given period.¹

In any event, the two types of estimates do not differ materially for major appliances, which are seldom received as gifts. More importantly, allowing for sampling errors and the considerable uncertainties about the independent estimates, both methods provided results that are reasonably consistent with the corresponding PCE figures. Except possibly for television sets, there is no clear directional bias, either positive or negative, for the group of major appliances as a whole. Moreover, in the case of television, there is a good possibility that the PCE estimates may be exaggerated.² Other evidence, such as estimates from the Census Bureau's Annual Housing Survey, indicates levels much closer to those of the quarterly panel data.

More noticeable differences between the two methods were observed for certain of the minor-appliance categories. The difference is especially large for small kitchen appliances, about half of which were acquired as the result of gifts. In this case, the first method, encompassing gifts given to others, fell markedly short of the PCE level. The estimate for method 2, which included gifts received from others, was still perhaps a bit low, but it was much closer to the PCE figure. For this product class, the aggregate value of gifts received (not shown separately in the table) was about \$350 million compared to only \$150 million for gifts reported given to others.

For photographic equipment, the other product class showing a large disparity relative to the PCE level, the use of the second

method does not appreciably close the gap. A likely explanation of the deficiency in this instance rests with the multiple possession of cameras and related items by various family members. There was probably insufficient attention in compiling the "inventory" to the likelihood of multiple ownership of this kind, and the survey respondent (usually the homemaker) probably overlooked some of the equipment owned by individual members.

Comparison With Diary Results

Although there was little intention of using diary results to measure appliance expenditures, it may be useful to examine the data to see whether or not they confirm previous opinion or experience in this field. Aside from problems of sampling variance, recordkeeping for short periods has been regarded as deficient in other ways for larger expenditures of this kind. One problem, especially for major durables, is determination of when an item is actually acquired—whether at the time a deposit is made, a contract signed, delivery received, payment completed, etc. With a short diary period, uncertainties of this kind could result in postponing entries beyond the period of coverage.

Estimates of aggregate annual expenditures from the diaries as compared to the quarterly panel are presented in table 6-2. Although sampling variances preclude definitive judgments, there appears to be a fairly consistent pattern of lower levels for the diary operation. Although some improvement might be possible by according greater attention to these items, the previous concern about likely understatement in diary-based estimates in this sector, while not completely confirmed, is certainly not allayed by these results.

Use of Prior Year's Data

With the large samples used in the 1972-73 survey, the variances for most of the major appliances were relatively modest (coefficients of variation of 4 to 8 percent for a single year). Even for individual small appliances, the coefficients were not excessive for a one-time survey. However, for a continuing survey program with smaller samples and the need for measuring short-term changes, there is a question as to whether the statistical reliability will be sufficient for the various purposes entailed.

One possible means of improving the reliability, almost without cost, would be to take advantage of the data obtained for prior years in the course of the inquiry. Under the inventory approach described earlier, all items currently on hand are recorded along with their date of acquisition. For those acquired in the year preceding the starting date for the survey (e.g., 1972 in the case of the 1973 quarterly panel), descriptive and cost data comparable to that for current acquisitions were also recorded. As a consequence (in addition to the different ways of estimating gifts), two separate estimates were available for 1972, one based on current acquisitions as determined in the 1972 quarterly panel operation and one based on acquisitions in the previous year as reported in the 1973 quarterly panel. In a continuing survey operation, two such estimates would be available for each year. Since there is very little, if any, correlation in the

¹The differences between the two methods of estimating gifts was reflected in the number of units involved as well as in aggregate expenditures, so that differences in reporting the value of individual gifts was not a prime factor.

²Special difficulties were encountered in developing the 1972 PCE estimates for television sets because of major changes in the mix of products within the category and the sharply increased importance of imports. Similar problems emerged in the case of sewing machines, although, in that case, these problems apparently resulted in an understatement in the PCE estimate.

purchase of these items by the same families in successive years, the two estimates could be combined with at least the same statistical reliability as the data from two independent samples of the same size.³ The effective sample size for these expenditures would, thereby, be doubled and the sampling variances reduced commensurately.

One problem with such a procedure is that there would be some gap in the timing with which the two separate estimates become available in a continuing program. This gap could possibly be accommodated by the common practice of issuing a preliminary estimate at the outset and a final estimate when the second set becomes available. For most definitive uses—such as index reweighting, updating of item lists, recalculating family budgets or defining criteria for income maintenance payments—there is usually, in any event, a significant timing gap between data availability and action.

A more important consideration may be the adequacy of the prior year's data obtained in this manner. These data do not contain the "bounding" safeguards that apply to the current

year's inquiry; other slippages are also possible—loss, theft, or destruction of items acquired during the previous year but no longer present when the "inventory" is taken. It should be noted that because the prior year's estimates are based entirely on the current inventory of items on hand, they represent the second, estimation method shown in table 6-1, that is, purchases for the family's own use plus the value of gifts received from others.

Table 6-3 presents two sets of estimates for 1972, one set based on the survey for that year and the other on prior-year data derived from the survey for 1973.⁴ The differences are statistically significant for only about half of the categories shown, but for each of these the prior-year estimate is the higher one. Also, both for major appliances and minor appliances as a group, the prior-year estimate is significantly greater. This pattern suggests that there may be some element of telescoping in the prior-year figures. At the same time, comparison with the corresponding PCE estimates does not reveal a clearly superior match on one basis as opposed to the other. In fact, a merger or combination of the two could well achieve the smaller margin of bias as well as the lower sampling error.

³In a continuing operation, the same families would be interviewed over a period of several quarters extending from one year into the next; therefore, the samples for two successive years would not be independent. The estimation procedure for combining the estimates under these circumstances would be more complex than if discrete samples are used each year, but it would still be manageable.

⁴For purposes of greater comparability, the current year's estimates in this table are also based on the second kind of combination—purchases for personal use plus value of gifts received.

Table 6-1.—Aggregate Expenditures for New Appliances: Quarterly Panel Estimates (Two Methods)
Compared to Personal Consumption Expenditures, 1972

Category	Quarterly panel estimates (millions of dollars) ¹		Ratio of quarterly panel estimates to estimated Personal Consumption Expenditures (PCE) [GNP accounts] ²		Estimated coefficient of variation of quarterly panel estimates ³ (either method) (percent)
	Method 1	Method 2			
	Purchases for own use and for gifts given to persons outside the household	Purchases for own use plus value of gifts received from persons outside the household	Method 1	Method 2	
Major appliances—Total	\$10,238.7	\$10,691.7	.895	.935	2.0
Cooking stoves and ranges	978.0	1,005.8	.874	.898	5.7
Refrigerators and freezers	1,636.1	1,707.8	.879	.917	4.9
Clothes washers and dryers	1,453.4	1,513.1	.944	.983	4.6
Dishwashers and disposals	546.9	563.0	1.098	1.130	6.7
Vacuum cleaners and other floor cleaning equipment	587.4	616.0	1.013	1.063	5.1
Sewing machines and cabinets	404.1	437.3	1.293	1.399	8.0
Room airconditioners	587.4	605.1	1.105	1.138	5.0
Television sets					
Black and white	535.6	588.5	.722	.793	4.8
Color	2,866.7	3,012.4	.816	.858	3.6
Yard machinery	643.1	642.7	.865	.865	7.3
Minor appliances ⁴ —Total	4,305.1	4,767.4	.868	.961	2.4
Small kitchen appliances	587.9	779.9	.661	.877	2.6
Portable heating and cooling equipment	237.9	243.9	1.135	1.164	5.0
Electric personal care equipment	322.5	368.3	.955	1.091	2.8
Sound equipment	2,260.9	2,417.3	.974	1.042	3.3
Photographic equipment	541.5	584.4	.636	.687	6.4
Power tools	354.4	373.6	1.008	1.063	6.1

¹These estimates are based on special rawweighted tabulations from the original survey tapes. They do not reflect editing changes which may have been made by the Bureau of Labor Statistics at later stages of processing and may, therefore, differ somewhat from estimates which have already or will subsequently be published by that agency. In addition to direct purchases and gifts, the estimates under both methods include the value of new appliances installed in and included in the price of a home.

²PCE estimates for 1972 used in calculating these ratios were projected by the author from detailed PCE data for 1967 using Census of Manufactures and foreign trade data for 1967 and 1972 (see appendix A).

³Preliminary.

⁴Minor appliance categories include the following:

Small kitchen appliances—toasters, mixers and blenders, electric can openers, coffeemakers, broilers, electric pens, electric knives, electric food warmers, electric irons, etc.

Portable cooling and heating equipment—portable heaters or stoves, dehumidifiers, humidifiers or vaporizers, electric window or portable fans, etc.

Electric personal care equipment—hair dryers, electric shavers, electric hair setters, electric toothbrushes, etc.

Sound equipment—radios, phonographs, tape recorders, record players, stereo components, etc.

Photographic equipment—still cameras, slide projectors, movie cameras, movie projectors, etc.

Power tools—electric drills, electric saws, electric sanders, etc.

Table 6-2.—Aggregate Expenditures for New and Used Appliances: Quarterly Panel Compared to Dairy Operation, 1972-73 Average

Category	Quarterly panel ¹		Dairy operation	
	Amount (millions of dollars)	Estimated coefficient of variation (percent)*	Amount (millions of dollars)	Estimated coefficient of variation (percent)**
Major appliances ²				
Kitchen appliances	\$4,265.5	2.5	\$2,801.3	10
Laundry appliances	1,773.1	3.3	1,319.9	15
Housecleaning appliances	639.0	3.7	445.7	30
Sewing machines	415.5	5.7	165.6	35
Television sets	3,620.9	2.5	2,383.4	10
Minor appliances ³				
Small kitchen appliances	599.7	1.9	477.6	20
Sound equipment	2,475.7	2.4	1,754.5	10

*Preliminary.

**Rough estimates based on acquisition rates.

¹Method 1 estimates, that is, purchases for own use or for gifts to others. Estimates are 1972-73 averages, whereas those in table 6-1 are for 1972 only.

²Kitchen appliances include cooking ranges, refrigerators and freezers, and dishwashers and disposals. Laundry appliances include washing machines and dryers. Housecleaning appliances include vacuum cleaners, electric brooms, floor waxes and polishers, and the like.

³For inclusions, see footnote 4, table 6-1.

**Table 6-3.—Expenditures for New Appliances from the Quarterly Panel:
Current-Year Compared to Prior-Year Based Estimates, 1972**

Category	Current year based estimates ¹ (1972 estimates based on 1972 survey)		Prior year based estimates ¹ (1972 estimates derived from 1973 survey)		Estimated standard error of the difference between the two estimates (millions of dollars) ³
	Amount (millions of dollars)	Ratio to PCE estimate	Amount (millions of dollars)	Ratio to PCE estimate	
Major appliances—Total	\$10,691.7	.935	\$11,974.4	1.047	\$323
Cooking stoves and ranges	1,005.8	.898	1,067.6	.953	85
Refrigerators and freezers	1,707.8	.917	2,057.1	1.104	131
Clothes washers and dryers	1,513.1	.983	1,777.7	1.155	107
Dishwashers and disposals	563.0	1.130	652.1	1.309	60
Vacuum cleaners and other floor cleaning equipment	616.0	1.063	771.8	1.332	50
Sewing machines and cabinets	437.3	1.399	493.9	1.581	53
Room air conditioners	605.1	1.138	614.5	1.157	44
Television					
Black and white	588.5	.793	656.4	.885	42
Color	3,012.4	.858	2,888.5	.823	150
Yard machinery	642.7	.865	994.8	1.338	85
Minor appliances ² —Total	4,764.4	.961	5,228.2	1.054	170
Small kitchen appliances	779.9	.877	882.1	.992	31
Portable heating and cooling equipment	243.9	1.164	271.9	1.297	18
Electric personal care equipment	368.3	1.091	423.7	1.255	16
Sound equipment	2,417.3	1.042	2,669.5	1.150	119
Photographic equipment	584.4	.687	638.9	.751	55
Power tools	373.6	1.063	342.1	.973	31

¹Method 2 estimates, purchases for own use plus value of gifts received from others.

²For inclusions, see footnote 4, table 6-1.

³Preliminary.

CHAPTER 7

Expenditures for Home Furnishings and Related Products

This chapter embraces a wide range of household furnishings and related commodities not previously covered. Included are furniture, household linens, dinnerware or cookware, decorative items, nonpowered tools, and various other items. Expenditures for these items totaled about \$25 to \$30 billion annually at the time of the survey.

Because of the diversity of items, the survey procedures differed somewhat for the various categories. Most were covered in the quarterly panel, and the information was collected each quarter for some items (mainly household linens) and semiannually for the remainder. Unlike the procedure for household appliances, direct questions were asked about expenditures in the previous 3-month or 6-month periods rather than starting with an inventory of items on hand.¹ As usual, all of these categories were also covered in the diary, in which there was a small section set aside for "housewares, furnishings, hardware, and garden supplies."

The margin of difference between the survey and independent estimates depends, to some extent, on which source is consulted. It may, therefore, be useful to start with some assessment of the independent data. For the first three categories in table 7-1—furniture, floor coverings, and household linens—the PCE estimates exceed those from the other independent sources. In the light of the experience with certain other categories, it is likely that the PCE estimates will be adjusted downward when the current benchmark revision (to 1972 Census and other data) is completed. The PCE estimate for luggage and related items may also be overstated, perhaps by as much as 15 to 20 percent, according to evidence from the author's work in updating earlier benchmark data. A smaller overstatement, percentagewise, is likely in the PCE estimate shown for dinnerware, glassware, and related items.² On the other hand, there is a possibility of understatement in the PCE estimate for window and furniture coverings because of the difficulty of deriving a reliable figure from production data (the usual source for PCE purposes) in a sector in which much of the final output is custom made. A

similar downward bias probably exists in the estimate for lamps, mirrors, and decorative items, a bias arising from the problems in adequately reflecting expenditures for original paintings and sculptures.

Even after allowing for these possibilities, the only category that exhibited a reasonably close correspondence between the survey and independent estimates is the furniture group. This result should not be too surprising in view of the rather consistent finding that higher cost products are more completely reported. Also not unexpectedly, the largest disparities were found for those categories composed of a wide spectrum of relatively small items—dinnerware, glassware, and kitchenware; lamps, mirrors, and decorative items; luggage and related items; and hand tools. The fact that the quarterly panel required a 6-month recall for those categories probably accentuated the problem.

The remaining categories—floor coverings, linens, and related items, and window and furniture coverings—seemed to fall somewhere between the two extremes. These categories contain a number of items of sizable cost and/or relatively conspicuous use. Also, for the lower cost categories—household linens and sewing materials—the questioning was carried out on a quarterly rather than a semiannual basis in the interview panel.

The independent estimates are too uncertain to permit more detailed comparisons than those shown in the table. Some very rough data suggest, however, that where the survey results were relatively close to the PCE levels (e.g., furniture), the similarity appeared to extend to the various subcategories as well. At the same time, where differences were large (e.g., dinnerware, cookware, etc.), the disparities were widespread over a whole range of items.

Timing Differences

One of the factors that probably contributed to the under-reporting of expenditures in the quarterly panel was the length of the recall period. Some of the smallest items (household linens and sewing materials) were canvassed each quarter, but the remainder were covered only at semiannual intervals.

Table 7-2 provides some indication of the effect of using shorter recall periods for household linens and sewing materials. For comparison with the original quarterly panel data (based on 3-month recall periods), the table provides estimates derived from reported expenditures in only the most recent (final) month of each 3-month period. Because the quarterly panel was

¹The large variety of items of this kind possessed by most households made it difficult to apply the inventory approach in this case.

²A downward adjustment of some \$700 million was made by the author in the Commerce Department's estimates for 1972-73 for this category, to exclude plastic products and a few other items not included in this group in the classification system used in the survey. Some additional items, possibly representing another \$200 million or so in expenditures, should probably have been deducted; but the identification of these items was not sufficiently precise for purposes of a further adjustment.

divided into three equal subpanels, each operating on a different quarterly cycle, the alternate estimates cover all calendar months of the year and are unbiased from the standpoint of seasonal variation.

As shown in the table, the use of data for the most recent month appreciably boosts the survey expenditure levels for both categories. On this basis, the quarterly panel estimate for household linens now exceeds that from the diary operation (table 7-1) and represents 85 to 90 percent of the smaller of the independent estimates; it is still considerably short of the PCE figure, however. For sewing materials, the alternate estimate now just about equals the diary level but remains well below the only available independent estimate from the Census of Business. From the discussion in earlier chapters, it will be recognized that at least part of this apparent improvement is a consequence of "telescoping," that is, in this instance, reporting a purchase as having occurred in the most recent month of a quarter that actually took place earlier. For smaller expenditures of this kind, exaggerations resulting from telescoping are frequently offset, or even outweighed, by the opposite tendency—respondents overlooking and omitting some of the purchases actually made during the reference period. As noted previously, these kinds of offsetting errors are present in nearly all survey operations of this nature and have much the same effect as a sampling variance. Because the alternate (most recent month) estimates correspond more closely to, but still do not exceed, the independent figures, it is likely that they represent the more accurate levels, in spite of the telescoping.

An illustration of the use of shorter time periods for the other categories of household furnishings is presented in table 7-3. For these categories—which were canvassed semiannually in the interview panel—the alternate estimates are based on reported purchases in the second (most recent) quarter of each 6-month period. Unlike the items reported on a quarterly basis, the timing of the panel interviews does not permit developing alternate estimates for these semiannual categories which are completely unbiased from a seasonal standpoint. In fact, the "second-quarter" estimates are exaggerated seasonally because the high-purchase month of December is overrepresented in the compilation.³ This problem is somewhat greater for categories in which gifts are relatively important, such as dinnerware and similar products and decorative items. The available data, unfortunately, are insufficient for the purpose of constructing and applying seasonal adjustment factors.

In spite of these limitations, the comparisons may cast some light on whether a reduction in the time reference is likely to achieve appreciable gains in reporting accuracy. As might be expected, the second-quarter estimates are substantially higher than the original survey figures in every category. In fact, for

furniture, the alternate estimate exceeds the independent levels by a moderate margin. Since a high-cost category of this kind is probably more subject to telescoping than to underreporting of purchases due to memory loss, it is likely that shortening the recall period without instituting strong "bounding" controls against telescoping could result in an overstatement of expenditures.

For two of the other categories—floor coverings and window and furniture coverings—the alternate estimates now begin to approach the independent levels, especially if we accept the lower of the two figures or even some point in between. Although these second-quarter estimates are subject to upward seasonal biases for the reasons given earlier, the effect should be somewhat less for these categories than for most of the others.⁴ However, as in the case of furniture, telescoping may be more of a factor than memory loss for items of this kind and would add to the upward bias of the alternate estimates. Nevertheless, the increases in the survey estimates arising from the reduced time reference are so large that they suggest a step in that direction could achieve significant gains in accuracy.

For the remaining three categories—dinnerware and related items, decorative items, and luggage—it appears that, even if the alternate estimates are accepted at face value, a shortening of the recall period in itself is not likely to overcome the marked reporting deficiencies. In fact, the "second quarter" estimates for these categories are among those most affected by the upward seasonal biases cited above, so that the computed gains may be more apparent than real.

Comparisons With Independent Estimates

Table 7-1 presents a comparison of the survey results with various independent data for broad categories of items. The independent sources will be familiar from the previous discussion. As usual, greatest dependence is placed on the Personal Consumption Expenditures (PCE) estimates prepared in conjunction with the Gross National Product accounts. Also used, in some instances, are the merchandise line data from the 1972 Census of Business and consumer panel estimates from the Market Research Corporation of America adjusted to client production and sales data. In view of the complexity of the categories covered, the caveats cited in previous chapters concerning the precision of these independent estimates apply with equal or greater force in this case. Moreover, there is considerable divergence among the sources in several instances, which accentuates the need for caution.

One of the more surprising findings exhibited in the table is the similarity between the quarterly panel and diary results for

³ This tendency may be slightly offset by the overrepresentation of some of the low-purchase summer months in the second-quarter estimates as well.

⁴ December is not as much of a seasonal peak for purchases of these items (or for furniture) as it is for some of the other categories or other kinds of merchandise.

most categories. The original intention was to depend principally on the interview panel for home furnishings and related expenditures, mainly because the relatively high sampling variances for certain of the categories could preclude the use of the diary estimates, except for very general purposes. However, variances aside, the most striking difference between the two

sets—that for dinnerware, glassware, and related items—was clearly in favor of the diary. Apparently, the 6-month recall period used in the quarterly panel was far too long to obtain even a semblance of complete reporting for this highly diversified category, which included many small, infrequently purchased items.

Table 7-1.—Aggregate Expenditures for Household Furnishings and Equipment: Quarterly Panel and Diary Operation Compared to Independent Sources, 1972-73

Category	Survey estimates ¹				Ratio of survey estimates to:					
	Quarterly panel		Diary operation		Personal Consumption Expenditures (PCE) [GNP accounts] ³		Census of Business Merchandise line data		Adjusted National Consumer Panel Data (Market Research Corporation of America) ⁴	
	Amount (millions of dollars)	Estimated coefficient of variation (percent) ²	Amount (millions of dollars)	Estimated coefficient of variation (percent) ²						
					Quarterly panel	Diary operation	Quarterly panel	Diary operation	Quarterly panel	Diary operation
Furniture*	\$9,494	2.7	\$9,390	10	.899	.889	.926	.916	—	—
Floor coverings*	3,136	3.2	2,350	7	.645	.484	.795	.595	—	—
Soft surface	2,860	3.2	2,080	7	.635	.462	.862	.629	.860	.625
Hard surface	276	—	270	—	.782	.765	—	—	—	—
Household linens	1,907	3.0	1,934	7	.576	.584	.790	.801	.736	.747
Sewing materials	1,878	3.0	2,292	5	—	—	.579	.707	—	—
Window and furniture coverings	1,554	3.5	1,444	10	.800	.744	.632	.588	—	—
Dinnerware, glassware and kitchenware*	918	3.2	1,964	5	.226	.484	—	—	—	—
Lamps, mirrors, clocks & decorative items	1,200	4.1	1,034	10	.567	.488	—	—	—	—
Luggage and closet storage items*	278	.5.1	322	10	.285	.330	—	—	—	—
Hand tools (except garden tools)	—	—	339	10	—	.579	—	—	—	—

*Survey and PCE estimates for these categories are 1972-73 averages. All other estimates in table are for 1972 except Market Research Corporation of America data which are for 1973.

¹These data are derived from reweighted original data tapes and do not incorporate editing changes which may have been made at later stages of processing by the Bureau of Labor Statistics. The estimates may differ somewhat, therefore, from those already published or to be published by that Agency. Whereas quarterly panel data are for calendar years, diary estimates are for fiscal years, July 1972-June 1974.

²Rough preliminary estimates. Sample sizes used in these computations are roughly twice as large for those categories denoted by asterisks (*) in the first column as for the remaining categories.

³For categories denoted by asterisks (*) in the first column of the table, the PCE data used to compute these ratios represent current estimates of the Department of Commerce for the appropriate years (not yet adjusted to the most recent 1972 benchmarks). The Commerce estimate for "dinnerware, glassware, etc." has been adjusted downward by the author by some \$700 million to eliminate plastic products and a few other items not included in this category in the classification system used in the expenditure survey. For categories not marked with asterisks, current PCE estimates were prepared by the author from PCE benchmark data for 1967 using Census production and foreign trade data for 1967 and 1972 (See appendix A).

⁴Computed from basic panel data using adjustment factors supplied by MRCA (See appendix A).

Table 7-2.—Aggregate Expenditures for Household Linens and Sewing Materials: Quarterly Panel Estimates Based on Data for All Months and on Reported Purchases in Final Month of Each 3-month Period, Compared to Independent Data Sources, 1972

[Millions of dollars]

Category	Quarterly panel estimates		Ratio of quarterly panel estimates to:			
	Based on data for all months ¹	Based on reported purchases in final month of each 3-month period	Personal Consumption Expenditures (PCE) [GNP accounts]		Census of Business Merchandise line data	
			Data for all months from panel	"Final month" data from panel	Data for all months from panel	"Final month" data from panel
Household linens	\$1,907	\$2,191	.576	.662	.791	.908
Sewing materials	1,878	2,282	—	—	.579	.704

¹Data collected each quarter based on reported purchases in previous 3 months. See table 7-1 for estimated coefficients of variation.

Table 7-3.—Aggregate Expenditures for Selected Household Furnishings: Quarterly Panel Estimates Based on Data for All Months and on Reported Purchases in Final 3 Months of Each 6-Month Period, Compared to Independent Data Sources, 1972-73
[Millions of dollars]

Category	Quarterly panel estimates		Ratio of quarterly panel estimates to:			
	Based on data for all months ¹	Based on reported purchases in final 3 months of each 6-month period	Personal Consumption Expenditures (PCE) [GNP accounts]		Census of Business Merchandise line data	
			Data for all months from panel	"2nd quarter" data from panel	Data for all months from panel	"2nd quarter" data from panel
Furniture*	\$9,494	\$11,319	.899	1.071	.926	1.104
Floor coverings,* new	3,136	3,764	.645	.774	.795	.954
Window and furniture coverings	1,554	1,938	.800	.998	.632	.789
Dinnerware, glassware, & cookware*	918	1,276	.226	.314	—	—
Lamps, mirrors, & decorative items	1,200	1,606	.567	.759	—	—
Luggage & related items*	278	387	.285	.397	—	—

*Survey and PCE estimates in this table are 1972-73 averages. All other estimates are for 1972.

¹Data collected at 6-month intervals based on reported purchases in previous 6-months. See table 7-1 for estimated coefficients of variation.

CHAPTER 8

Automobile and Other Vehicle Expenses

This chapter is concerned with some of the largest items in the American family budget—the purchase, maintenance, and operation of automobiles and other vehicles. Expenditures for these purposes aggregated over \$100 billion annually at the time of the survey. Because of the diversity of products and services, both the quarterly panel and the diary operation were enlisted in this cause. The interview panel was almost automatically assumed to be the source for data on vehicle purchases, in view of the large sampling variances associated with this item. However, there was much less certainty concerning the optimal source for the remaining categories. Detailed questions were included each quarter in the interview panel covering expenditures for maintenance and operation of automobiles and other vehicles during the preceding 3 months. These items were also specifically covered in the diary operation in a small section set aside for “gas, oil, tolls, parking fees, and other vehicle expenses.”

Automobile Purchase

The “inventory” approach was used in the quarterly panel to determine expenditures for automobiles and other vehicles. At the first quarterly visit, questions were asked about possession of vehicles of all kinds, and various details about those vehicles on hand were requested, including a description of each and the date of acquisition. Respondents were also asked whether any additional vehicles had been acquired during the year, and, if so, at what price. The procedure was not quite as precise as that used for household appliances, but the fact that automobiles constitute the largest and most costly class of durables probably means that less probing would ordinarily be required to obtain results of comparable reliability.

Table 8-1 compares the survey estimates of expenditures for new and used cars with those from various independent sources.¹ In addition to two familiar sources—the Personal Consumption Expenditures (PCE) estimates and the merchandise line data from the 1972 Census of Business—a third source was used: the Annual Housing Survey conducted by the Bureau of the Census, which collects information on the housing characteristics of the population and, for certain years, data on expenditures for selected appliances and equipment items.

¹Only the quarterly panel estimates are being used in this comparison. The diary-based estimates were only about half as large, and this fact confirmed previous findings that short-term recordkeeping is generally inadequate for measuring large expenditures of this kind.

Three different survey estimates are provided in the table in order to achieve greater comparability with the independent data. The gross value (before trade-in) and the net value (after trade-in) estimates are probably reasonably comparable with the corresponding Annual Housing Survey figures. Both these sources include not only automobiles purchased for personal (nonbusiness) use, but also those possibly used partly for business. Those purchased exclusively for business use, however, would be excluded. As is evident, the expenditure survey and housing survey estimates are very close, for both new and used cars and on both a gross and net basis.

The survey estimate that is probably closest to the PCE level for new cars is the one based on gross value after adjustment for business use.² For vehicles purchased partly for business use, survey respondents were asked for the estimated percentage of mileage that would be devoted to business purposes. This estimate was the principal basis for adjusting the survey figure. On this adjusted basis, the survey and PCE estimates for new cars correspond closely in both years. Certain conceptual differences remain which could affect this comparison. For example, the PCE estimate includes expenditures made by nonprofit institutions, probably a very small percentage of the total. On the other hand, retail sales discounts are presumably excluded from the PCE estimates but may be included, in part, in the “gross” survey estimates. It is not likely, however, that these kinds of differences could markedly reduce the correspondence exhibited in the table.

The Census of Business figure includes retail sales of automobiles both for business use exclusively and for other purposes, and this undoubtedly accounts for the higher expenditure level shown for new cars. Although the disparity between the Business Census and the survey figures is difficult to assess, it does not appear to be excessive in view of this difference in coverage. The Business Census estimate for used cars is undoubtedly understated; many of these are sold directly by private owners rather than through sales outlets.

Comparisons for other vehicle categories are complicated by classification problems³ and by more widespread use for business purposes. Because of classification difficulties, for example,

²The PCE estimate for used cars represents only the profit margin for sales of used cars plus the value of used cars transferred to private use from Government or business use. This figure is, therefore, not used in these comparisons.

³For one important category—motorcycles and scooters (for which the survey estimates were close to \$1 billion annually)—the PCE estimate is included as part of a much larger aggregate so that no direct comparison was possible.

a comparison between the survey and PCE data is possible only for new trucks, trailers, and recreational vehicles combined. On this basis, the survey figure (after adjustment for business use) amounted to about \$4.9 billion annually, which was about 10 percent below the PCE estimate. However, uncertainty about the accuracy of the business-use allocation in PCE could mean that the true difference was either smaller or larger. For boats, the survey estimate of some \$850 million annually (for new boats) was some 30 percent under the PCE aggregate. This difference could also be affected by the "business-use" allocation, but population coverage could be a minor contributing factor. Some people purchase boats for use as their main living quarters, but such acquisitions might be largely omitted in a household survey because of the difficulty of locating and covering that segment of the population.

Gasoline and Oil

Comparisons between the survey and the independent estimates of expenditures for gasoline and oil are provided in table 8-2. The estimates relate to expenditures for all vehicles combined, because separate data for automobiles are not available from the independent sources.

The diary estimates have been adjusted upward by about \$2.3 billion in each year to account for gasoline purchased while on trips or vacations. In the survey procedure, no entries were to be made in diaries during periods in which all family members were away overnight or longer. However, gasoline expenditures might, of course, be especially large on such occasions. The adjustment was based on a special inquiry in the quarterly panel which obtained an itemized account of a family's expenditures for each trip which lasted overnight or longer.

After this adjustment, the diary and quarterly panel estimates are not significantly different. Ordinarily, some understatement might be expected in the diary estimates because the homemaker, who was usually the recordkeeper for the family, might not be aware of all of the gasoline purchases made by the husband or the young drivers in the family. However, gasoline is one of the most regularly purchased items, and the homemaker might be more inclined than in other cases to inquire about such outlays when completing the record.

As the table indicates, the survey estimates are quite close to both sets of independent data. One reason they might slightly exceed the PCE levels is that they probably include a small margin of expenditures for business use which are presumably excluded from PCE. The Census of Business estimates, on the other hand, probably reflect an appreciable amount of sales for business purposes but may exclude some sales for private use which are made in repair shops or other establishments outside of the coverage of that Census.

Vehicle Repair, Maintenance, and Miscellaneous Expenses

Table 8-3 presents a comparison between the survey and independent estimates for the remaining major categories of vehicle expenses—those for tires and accessories, maintenance and

repair, licensing, and insurance. There was considerable uncertainty during the planning stages of the survey as to whether the quarterly panel or the diary operation would be the more effective instrument for these purposes.

As demonstrated in the table, the quarterly panel appears to be considerably superior to the diary in most categories. Moreover, there is a high degree of correspondence between the interview panel and the independent estimates in most cases in which comparisons are possible. This outcome was somewhat unexpected for the broad category of repair and maintenance expenditures where a good deal of difficulty had been anticipated in obtaining accurate measurements. Of course, the independent PCE estimate may also be subject to a good deal of inaccuracy in this particular instance, and the lack of itemization in the comparisons could conceal some appreciable differences.

The close match for vehicle insurance premiums, like that for health insurance (see chapter 10), suggests that the modified "inventory" approach⁴ used for insurance in general was effective. The disparity for vehicle accessories indicates, not surprisingly, that a 3-month recall period was probably too long for a category consisting of a wide diversity of relatively small products.⁵

Although the data from the diary operation appear to be deficient in many respects, there are some insights into the reasons for these differences. One apparent problem, also observed in previous reports, was that many diary entries were incomplete, probably because of insufficient space for the expenditure category and/or inadequate attention by interviewers to this matter at the time of diary pickup. As a consequence, there is a large residual expenditure category ("combined or unspecified costs") which obscures some of the comparisons. If this amount were distributed among the specific categories it might eliminate much of the gap for vehicle repairs and at least reduce the differences for other items.⁶

Another likely explanation for the apparently understated diary levels for accessories, tune-ups, and such items is one already mentioned in the discussion about gasoline, that is, that a single respondent (generally the homemaker) kept the diary for the entire family. Maintenance of vehicles is, of course, one responsibility most likely to be assumed by the husband or,

⁴The procedure called for recording, at the first interview, all of the policies in effect at that time, together with a description of each. At the final interview a year later, information on premiums paid during the year was obtained for those policies still in effect. Newly acquired policies were also recorded at that time, together with the premiums paid up to that point.

⁵Alternate estimates based on reported expenditures in the most recent month of each 3-month period showed a higher level of expenditures for accessories of about 10 percent, still a large deficiency in comparison to the PCE level.

⁶This residual category probably includes some expenditures for gasoline made in combination with other outlays and some miscellaneous items, so that the amount allocable to repairs and maintenance is uncertain.

for second or third cars, by the younger drivers as well. Because such expenditures are irregular in nature, the homemaker might be less likely to think of and ask about them than in the case of gasoline. Although the quarterly interviews are also usually conducted with the homemaker, these panels allow more time and opportunity than do diary records for the respondent,

through observation, family discussions, receipt of bills, and the like, to become aware of expenditures made by others. At the same time, the relatively low diary estimates for vehicle registration and insurance premiums confirm another finding—that a short-term recordkeeping approach is often ineffective for very infrequent types of expenditures.

Table 8-1.—Aggregate Annual Expenditures for New and Used Automobiles: Survey Estimates (Quarterly Panel) Compared to Various Independent Sources, 1972-73

Source	New automobiles			Used automobiles		
	Amount (billions of dollars)		Estimated coefficient of variation (percent) ²	Amount (billions of dollars)		Estimated coefficient of variation (percent) ²
	1972	1973		1972	1973	
Survey estimates (quarterly panel) ¹						
Gross value (before trade-in allowance)	\$34.7	\$36.6	3.5	\$19.0	\$18.9	3.5
Net value (after trade-in allowance)	28.8	30.2	3.5	16.8	17.2	3.5
Gross value after adjustment for business use ³	32.2	34.4	3.5	18.1	17.9	3.5
Personal Consumption Expenditures (PCE) (GNP Accounts)	32.1	34.5				
Census of Business Merchandise Line Data	36.8			14.1		
Annual Housing Survey (Bureau of the Census)						
Gross value (before trade-in)		37.1	2.0		18.4	2.0
Net value (after trade-in)		30.7	2.0		16.5	2.0

¹These data are derived from reweighted original data tapes and do not incorporate editing changes which may have been made at later stages of processing by the Bureau of Labor Statistics. The estimates may differ somewhat, therefore, from those already published or to be published by that agency.

²Preliminary.

³Adjustment applied to automobiles used partly for business purposes and was based on respondent estimates of the percentage of total annual mileage used for such purposes. Automobiles used entirely for business purposes were excluded from all of the survey estimates, gross or net. These adjusted figures are probably the ones most comparable with the PCE estimates.

Table 8-2.—Aggregate Annual Expenditures for Gasoline and Oil: Survey Estimates Compared to Independent Sources, 1972-73

Source	Amount of expenditure (billions of dollars)		Estimated coefficient of variation (percent) ¹
	1972	1973	
Survey Estimates ²			
Quarterly panel	\$25.4	\$29.1	1.5
Diary operation	³ 24.0	³ 28.1	2.5
Personal Consumption Expenditures (PCE) (GNP Accounts)	24.9	27.8	
Census of Business Merchandise Line Data	26.3		

¹Preliminary.

²Quarterly panel data are for calendar years, diary estimates for fiscal years, July 1972-June 1973 and July 1973-June 1974, respectively.

³Diary estimates were adjusted upward by around \$2.3 billion to include gasoline expenditures on trips or vacations. Under the procedure used, no entries were made in diaries during periods in which the family was away overnight or longer. Adjustment was based on a special inquiry in the quarterly panel on itemized expenses incurred on trips or during vacations.

**Table 8-3.—Aggregate Annual Expenditures for Vehicle Repair, Maintenance, and Miscellaneous Items:
Survey Estimates Compared to Independent Sources, 1972-73**

Category	Survey estimates				Ratio of survey estimates to Personal Consumption Expenditure (PCE) estimates	
	Quarterly panel		Diary operation			
	Amount per year (billions of dollars)	Estimated coefficient of variation ¹ (percent)	Amount per year (billions of dollars)	Estimated coefficient of variation (percent) ¹	Quarterly panel	Diary operation
Tires and accessories						
Tires (except recaps)	\$4.0	2.0	\$2.9	7.0	.938	.676
Accessories	1.2	1.5	1.2	5.0	.673	.672
Repair, maintenance, and Miscellaneous expenses						
Total, except registration, licensing, and insurance . .	13.1	1.5	11.9	5.0	.892	.811
Vehicle repairs	8.8	2.0	7.8	5.0		
Tune-ups, lubrication . .	2.8		0.6			
Parking	0.8		0.6			
Vehicle rental	0.7		0.4			
Combined or unspecified costs . . .			² 2.5			
Vehicle registration, licenses, inspection, and docking fees	3.9	(NA)	1.6	(NA)	(NA)	(NA)
Vehicle Insurance premiums	13.9	1.0	10.1	(NA)	3,927	3,606

(NA) = Not available.

¹ Preliminary.

² Consists primarily of cases where diary entries were not sufficiently precise to allocate the expenditures to any of the categories shown. Also includes a small amount (\$150 million) for car washing. May also include some purchases of gasoline made in combination with other expenses.

³ Because PCE data on insurance premiums have a different conceptual basis (see appendix A), the comparison here uses insurance industry figures instead. The source is aggregate premium data for private vehicles compiled by A.M. Best and Co. The ratios in the table are based on a comparison of the survey and A.M. Best figures for 1973.

CHAPTER 9

Housing Costs

This chapter deals with housing costs, which have replaced food expenditures as the largest single element in the American family budget. The topics covered here include rent, mortgage payments, real estate taxes, fuel and utility costs, and property maintenance and improvement. Although the quarterly panel was regarded as the principal source of this information, a parallel set of estimates can be constructed from the diary results.

Survey Procedures for Housing Items

A variety of rather complex procedures was used in the quarterly panel for purposes of measuring housing expenditures. At the first interview, an "inventory" was recorded of all real property owned or being bought by the respondents. The inventory described the type of property; whether it was for residential, business, or rental use; the date of acquisition; and, if the property was obtained within the previous 3 years, its price and closing costs.¹ At the final visit a year later, this inventory was updated to record any newly acquired property and to identify any property sold or otherwise disposed of during the year. For families who had moved into sample units during the course of the year, the initial inventory also included property owned at any time during the prior year.

For each owned property in the "inventory," information was obtained at the final quarterly visit concerning indebtedness, including a good deal of information (size of debt, interest rate, duration, monthly payment, etc.) about each outstanding mortgage. In addition, sufficient information on number of payments, special fees, and other mortgage-related expenses, was recorded to derive total annual outlays. At this final interview, other questions were addressed to related property costs, such as real estate taxes, special assessments, and ground rent.

For renters, information was obtained at the first visit on the monthly (or other periodic) rent, and the kinds of facilities and services, if any, included in the payment. The same type of information was recorded at the final visit in order to identify any changes that may have occurred. These data, together with information on prior rental quarters for in-movers during the year, provided the basis for calculating annual expenditures for rent.

¹At the second quarterly visit, considerable detail was also obtained about the living quarters currently occupied by the family (e.g., number of rooms, type of heating system and fuel used, age of structure, etc.). This detail was obtained for rental as well as for owner-occupied units.

At each quarterly interview, an inquiry was made on expenditures for repairs, alterations, and maintenance of owned property.² The procedure called for identifying any projects of this kind undertaken during the previous 3 months and for detailing of any contract costs or direct expenditures for material and supplies.

A special technique, known as the "last payment" principle, was used each quarter to determine utility costs.³ Instead of asking directly about expenditures during the previous 3 months, the interviewer asked for the amount of the most recent bill and for the period (1 month, 2 months, etc.) to which it related. These data provided a basis for converting the information to a consistent time period. For fuel expenditures, however, direct questions were asked about purchases in the preceding 3 months.

Only minimal provision was made in the diary operation for housing expenditures. A small section was set aside on the diary record for "rent, utilities, fuel, phone, insurance."

Comparisons With Independent Data

Table 9-1 compares the survey results for housing expenditures with various independent data. A main independent source, as for other categories, is the Personal Consumption Expenditures (PCE) estimates. No comparison with PCE is possible, however, for some of the largest segments of housing costs—mortgage finance charges, property taxes and assessments, or home repairs or alterations. For PCE purposes, an artificial measure, theoretically representing the rental value of owner-occupied properties, is substituted for these kinds of ownership costs.⁴ A few comparisons are made with data from two Census Bureau sample surveys, the Annual Housing Survey (AHS) and the Survey of Residential Alterations and Repairs (SORAR), which are described in appendix A.

Continuing the somewhat surprising pattern exhibited for various other expenditure classes, there appears to be a good deal of similarity between the quarterly panel and diary estimates for several categories of housing costs, especially for rent, utilities, and fuel purchases. In the diary operation, the exis-

²The questions were adapted from the Census Bureau's Survey of Residential Alterations and Repairs.

³This technique was adapted from the continuing consumer expenditure survey in the United Kingdom.

⁴Interestingly, the PCE annual aggregate estimate for this item (about \$80 billion at the time of the survey) was very close to the results of a special question included in the expenditure survey on what homeowners believed their homes would rent for on the open market.

tence of a large residual group under utilities, resulting mainly from incomplete or inadequately described entries in the record book, obscures some of the more detailed comparisons but does not detract from the essential pattern.

The much lower diary estimate for home-mortgage payments might be attributable, in part, to the fact that some such disbursements are made directly from bank accounts and could be forgotten by respondents. Also, some mortgages are repaid on an irregular basis and this irregular payment could cause some slippage in the diary recording. No direct comparison is possible with the data presently available for home repairs and alterations, because the quarterly panel estimates relate to all real property owned by the family, whereas the diary estimates theoretically exclude property used for business purposes or rented to others.⁵ Data from SORAR suggest, however, that the difference between the quarterly panel and the diary estimates is not inconsistent with that expected from the difference in coverage.

Comparison of the surveys with the independent sources reveals a considerable degree of correspondence, especially for the quarterly panel estimates. In fact, many of the ratios are not significantly different from unity, which of course would constitute an exact match. This relative success in measuring housing expenditures was not entirely unexpected in the light of previous experience in this field.⁶ The regularity of many of these outlays is undoubtedly a contributing factor; the introduction of special techniques in the interview panel, such as recording an inventory of all properties at the outset and using the so-called "last payment" principle for utilities, also added some refinement to the methods used heretofore.

⁵ Comparisons on a more consistent basis should be possible from data which will be available in the future.

⁶See, for example, Peter Frontzak and David Koons, "Study of Home-makers' and lenders' Responses for Monthly Mortgage Payments, Yearly Real Estate Taxes, and Yearly Property Insurance Payments," Paper presented at American Marketing Association/Bureau of the Census Seminar on Survey Methodology, Washington, October 1976.

The only major disparity between independent estimates and both survey estimates is for fuel costs, but part of that difference can be ascribed to conceptual factors. The PCE estimate includes all fuel used for rental quarters, regardless of whether the landlord or the tenant was responsible for providing heating and hot water. The survey estimates, on the other hand, include fuel purchases for rented quarters only if the tenant paid directly for those services (mainly for rented one-family homes and some older multifamily units). The amount attributable to this conceptual difference cannot be ascertained with any precision, but a "ballpark" estimate would place it at \$1 billion at the very minimum. The survey-PCE ratio would increase to somewhere around 0.80 if a minimal allowance of this magnitude were made.⁷

It should be stated that although the overall comparisons for home repairs and alterations were reasonably close, there were a number of differences in detailed components (not shown in the table). For example, the SORAR data indicate that about 40 percent of total expenditures were for repairs and maintenance (as opposed to structural changes), whereas the corresponding quarterly panel figure was only 25 percent. Aside from the higher percentage allocated to structural changes, the quarterly panel data are distributed differently among additions, alterations, and replacements. Detailed comparisons between the diary estimates and SORAR are precluded because of the existence of a large undifferentiated group of repair and replacement expenditures in the former. However, the diary estimates appear to show a larger proportion of expenditures for materials and supplies and less for labor and service contracts than does SORAR. Whether these various deviations at detailed levels are attributable to differences in classification, to sampling errors (which are quite substantial for the various components), or to other causes is not known. However, the subject bears further investigation.

⁷ This type of conceptual difference would also affect the comparisons for utility costs. If a correction could be made for this factor, the survey-PCE ratios might increase by several percentage points.

Table 9-1.—Aggregate Annual Estimates of Housing Expenditures: Quarterly Panel and Diary Operation Compared to Independent Sources, 1972-73

Category	Survey estimates ¹				Ratio of survey estimates to independent sources		
	Quarterly panel		Diary operation		Quarterly panel	Diary operation	Source of independent data ³
	Amount (billions of dollars)	Estimated coefficient of variation (percent) ²	Amount (billions of dollars)	Estimated coefficient of variation (percent) ²			
Contract rent ⁴	\$40.0	2.0	\$38.8	3.0	1.043	1.013	⁵ PCE
Mortgage payments ⁶	52.1	3.0	35.1	5.0	1.044	.703	AHS
Property taxes ⁷	19.1	3.5	(NA)		.954		AHS
Home repairs and alterations							
All owned property	18.9	5.0	(NA)		1.048		SORAR
Own home ⁸	(NA)		12.5	15.0		1.037	SORAR
Utilities-total	36.2	1.5	38.7	2.0	.981	⁹ 1.049	PCE
Electricity and gas	19.2	1.5	17.9	2.0	.976		PCE
Water, sewerage and trash collection	4.2	2.0	3.3	3.0	1.055		PCE
Telephone and telegraph	12.4	1.0	13.6	2.0	.931		PCE
Cable TV	0.5	(NA)	0.3	(NA)	1.028		PCE
Type not specified			3.6				
Fuel (fuel oil, coal, tank gas, etc.)	4.4	2.0	4.2	5.0	.630	.594	PCE

(NA) = Not available.

¹ The data are derived from reweighted original data tapes and do not incorporate editing changes which may have been made at later stages of processing by the Bureau of Labor Statistics. The estimates may differ somewhat, therefore, from those already published or to be published by that agency.

² Preliminary. The coefficients of variation of the two AHS base figures used in computing the ratios of survey to independent estimates were about 2 percent (mortgage payments) and 2.5 percent (property taxes), respectively. The coefficients of variation of the SORAR figures used for home repairs and alterations were about 3 percent in both cases. The PCE estimates are not constructed in a manner which would permit calculation of sampling variances.

³ Independent sources are as follows:

PCE—Personal Consumption Expenditures, GNP Accounts

AHS—Annual Housing Survey, Bureau of the Census

SORAR—Survey of Residential Alterations and Repairs, Bureau of the Census

(PCE and SORAR data are 1972-73 averages; AHS data are for 1973.)

⁴ Includes any utilities or facilities covered as part of the periodic rent payment. Excludes utilities paid separately by consumer unit.

⁵ PCE estimates adjusted upward by author by about \$4.7 billion to restore amounts deducted by Commerce Department in converting census contract rent figure to "space" rent concept used for PCE purposes (see appendix A).

⁶ Includes principal, interest, and, if covered by periodic payment, property taxes and insurance.

⁷ Includes both property taxes paid as part of periodic mortgage payments and those paid separately by homeowner. There is some duplication, therefore, between the "mortgage payments" and "property tax" categories in the table.

⁸ For diary estimates, excludes expenditures for business purposes (presumably on business property or property rented to others). For SORAR estimates used to compute ratio, refers to 1- to 4-unit owner-occupied property. These categories would approximate expenditures on owner-occupied property.

⁹ Ratios for diary estimates shown only for total utilities because of large residual group (utility type not specified) in distribution by utility type.

CHAPTER 10

Health Expenditures

This chapter focuses on one of the major problem areas in the expenditure field—the measurement of health expenditures. Aside from the intricacies arising from the diversity of services and products this category embraces, reporting of health expenditures is greatly complicated by the pervasive influence of health insurance and other so-called third-party payors. The objective in the 1972-73 survey was to measure out-of-pocket costs, that is, the family's net expense for health services after it has been reimbursed by insurance or any other source. For this purpose, a detailed series of questions was included in the interview panel on a semiannual basis covering the following areas: the use of any kind of health services during the preceding 6 months; the total cost of such services; the actual or anticipated reimbursement, if any, from insurance or other sources; and the net expense to the family. Purchases of a few major health products—prescription drugs and medical appliances—were also covered by the questioning.

As usual, all expenditures were also covered by the diary operation. A small section on the diary form was set aside for "personal care, drugs, and medical supplies." However, the form did not specifically mention the main body of health expenditures (i.e., hospital charges, physician services, etc.), and these were relegated to various catchall sections.

Previous Efforts To Measure Health Expenditures

Because of the large and rapidly increasing cost of health services, numerous attempts have been made to measure and chart expenditures in this field. A discussion of these efforts may be helpful both as background and because some of the data will be used as yardsticks in appraising the current survey results.

Perhaps the longest standing endeavor of this kind is the preparation by the Social Security Administration (SSA) of annual aggregates of national health expenditures in various broad categories—hospital care, physicians' services, drugs and drug sundries, etc. Data are developed on the total cost of such services and products and on the source of funds for payment—whether payment is made directly by the consumer or through private health insurance, Government, philanthropic, or industrial enterprises, and the like. A variety of primary data sources is used in the preparation of these estimates, including information on health providers from Internal Revenue Service records and statistics compiled by the American Hospital Association and other private health-related organizations. As is customary for constructed series of this kind, numerous transformations of the original data are made, and there is no way of assessing the validity of the results.

A parallel effort is represented by the Personal Consumption Expenditures (PCE) estimates prepared by the Commerce Department in conjunction with the Gross National Product accounts. For health services, the primary data sources used are broadly similar to those consulted by the Social Security Administration. The PCE estimates, in this case, comprise the total cost of the services; including that part defrayed by health insurance. For health products, the PCE estimates are developed from production data (mainly from the Censuses of Manufactures) converted to a purchase value basis.

More direct attempts to measure health expenditures have been made through various survey mechanisms. On occasion (most recently for 1970 and 1974), an inquiry on health expenditures has been appended to the continuing Health Interview Survey (HIS) conducted by the Census Bureau under the sponsorship of the National Center for Health Statistics of the U.S. Public Health Service. The procedure in these recent efforts has been to drop off questionnaires on this subject at the conclusion of the regular HIS interview. The questionnaires are self-administered and mailed in by respondents. A separate form is provided for each family member, requesting estimated total (out-of-pocket) expenditures in the previous year for a few broad categories—dental bills, doctors' bills, hospital bills, prescription medicines, eyeglasses, and miscellaneous items—and for health insurance premiums.

A more painstaking approach is that employed in a series of intermittent household surveys (the most recent covering 1970) by the Center for Health Administration Studies (CHAS) of the University of Chicago. The procedure was to conduct an extremely detailed interview with the family to identify all health-related episodes during the previous year, such as hospitalizations, serious accidents, pregnancies, chronic conditions, etc., which might entail substantial health expenditures. The interviewer also inquired about treatment and costs for each such episode. A final series of questions addressed residual, smaller expenditures for the same period.

Various other survey techniques have also been used in this connection from time to time. One technique was to identify all health practitioners used by the family during the reference period and to inquire about treatments and expenditures involved in each case.¹ Another technique for recording health

¹Kent H. Marquis, M. Susan Marquis, and Joseph P. Newhouse, "The Measurement of Expenditures for Outpatient Physician and Dental Services: Preliminary Findings from the Health Insurance Study," Proceedings of the American Public Health Association Meetings, Chicago, November 1975.

services used was to experiment with diaries for more extended periods, such as over a calendar quarter, with periodic collection in between.²

The Health Resources Administration of the U.S. Public Health Service, after a period of research and experimentation, is currently sponsoring a new undertaking in this field. The basic procedure is to cover a national household panel over a 12-month cycle at 2-month intervals to measure use of health services and expenditures for this purpose. Personal interviews are being used for the first two intervals and for the final inquiry. Telephone contacts are employed for the intervening periods. Respondents are asked to keep records of expenditures and related items during each interval, and these records are used for reference purposes in conducting the interviews. Although specific arrangements have been made for only one annual cycle of this kind, the hope is that this new procedure will be the starting point for at least an intermittent series of surveys.³

Quarterly vs. Diary Results

Turning once again to the 1972-73 survey, it may be useful to begin with a comparison between the quarterly panel and the diary results for the various categories. Partly because of sampling variances, the initial intention was to depend largely on the panel for the main body of health expenditures. Also, it was believed that an interview procedure might be necessary to determine the impact of health insurance and other third-party payors. The diary, however, was regarded as the likely, if not only, source for some of the smaller expenditures, principally medical supplies and over-the-counter drugs.

In spite of expectations to the contrary, table 10-1 reveals a rather surprising similarity between the diary and quarterly results for some of the main categories of out-of-pocket health expenditures. Unfortunately, the coding and classification procedure used in the two operations differed in a number of respects, so only broad comparisons are possible with the data presently available. However, the levels are almost identical for professional medical care and services, dental care, and eye care. The higher level of expenditures the interview panel shows for hospital services may largely reflect the inability to identify from sometimes incomplete diary entries all of the subsidiary services (x-rays, laboratory tests, etc.) that were provided in hospitals. (Such services were assumed to be rendered outside unless specifically indicated as given in hospitals.)

²Seymour Sudman, Wallace Wilson and Robert Ferber, "Cost Effectiveness of Using the Diary as an Instrument of Collecting Health Data in Household Surveys," Preliminary Report to Bureau of Health Services Research and Evaluation, HRA, Public Health Service, Survey Research Laboratory, University of Illinois, Urbana, 1974. This study dealt with use of health services rather than expenditures, but the techniques and findings should be applicable to expenditures as well.

³The initial survey will be conducted under contract with the Research Triangle Institute and the National Opinion Research Center. The panel will consist of approximately 10,000 households.

The obviously understated diary estimate for health insurance premiums is understandable, because so large a proportion of these are paid through payroll deductions and might be unknown to or at least easily overlooked by the family record-keeper. On the other hand, the interview panel seems to have understated the few small expenditure items (e.g., prescription drugs) included on the questionnaire. The fact that a 6-month recall period was used in the panel for all health expenditures undoubtedly contributed to the deficiency.

Overall Comparisons With Independent Sources

A comparison of the overall survey data with various independent sources described earlier in this report is presented in table 10-2. The comparisons relate to out-of-pocket health expenditures, excluding drugs and health insurance premiums, because these particular aggregates could be derived for all of the sources.

As is evident, the survey estimates are somewhat, but not markedly, below two of the independent sources—the SSA and CHAS estimates. The difference with SSA almost disappears, however, when an adjustment is made to exclude nursing home care, which represents a conceptual difference between the sources. The 1972-73 survey was limited to the civilian noninstitutional population, and expenditures for nursing home care would be included only if actually paid for by residents of the survey units. Inclusion of nursing home care could occur if a person who was living in the survey unit at the time of interview had spent some time in a nursing home during the 6-month reference period used in asking about health expenditures. More likely, the survey would cover payments made by family members on behalf of relatives who were longtime residents of nursing homes. In either case, the total expenditures for these purposes would likely cover only a small fraction of the actual costs of nursing home care in the United States. The largest part of expenditures undoubtedly are made by the nursing home residents themselves, by public or private agencies, or by third-party payors. The SSA estimates cover the entire population, including residents of nursing homes, and would include payments made by such persons directly as well as those made on their behalf. In contrast, the comparison between the 1972-73 survey and CHAS estimates should not be materially affected by this factor, because both covered only the civilian noninstitutional population. Therefore, an adjustment in CHAS figures to exclude nursing home care (which cannot be made with available data) would not be likely to reduce the gap to any extent.⁴

As is also apparent, the third independent source in table 10-2—the HIS estimate—exceeds the 1972-73 survey levels by a sizable margin. There is reason to believe, however, that the procedure followed in HIS—using self-administered questionnaires to obtain annual estimates for very broad categories of services—can result in an exaggeration of expenditures. In fact, previous

⁴However, the differences between the survey estimates and those of CHAS were just about on the borderline of statistical significance before adjustment.

analyses of HIS estimates reveal that they consistently exceed the levels in SSA and other independent sources, often by appreciable amounts.⁵ The differences shown here, therefore, cannot by themselves be construed as indicative of serious deficiencies in the expenditure survey results.

It may be noted that, for the first time in this report, the GNP Personal Consumption Expenditures (PCE) estimates are not used as a principal basis for comparison in this case, although some limited use is made of them in examining drug expenditures. However, as previously indicated, the PCE estimates for health services in general incorporate the contribution from health insurance and other third-party payors, and there is not enough information available to derive out-of-pocket costs alone. The overall PCE estimates for health services, including insurance and related payments, are several billions of dollars higher than the corresponding SSA levels for the 1972-73 period, and nearly all of the difference is in the hospital care category. However, the PCE estimate for hospital services includes nursing home care and medical research financed by private and philanthropic sources, and these additional items could account for a good part of the difference. Although there is some uncertainty about the hospital figure, there does not otherwise appear to be any basic inconsistency between the PCE and SSA estimates for direct medical care.

Comparisons of Expenditure Categories

Because of classification and conceptual differences, it is not possible to study the relationships between the survey and independent estimates in any appreciable detail. A few broad comparisons can be made, however, and these are presented in table 10-3. For this purpose, the "best" survey estimate is used. Where there was no significant statistical difference between the quarterly panel and diary levels, the former was chosen as the "best" estimate because it had the smaller coefficient of variation. For categories in which there was a significant difference, the estimate that was generally closer to the independent levels was selected.

Discounting many of the HIS levels as probably overstated, there appears to be a reasonably close correspondence between the survey and independent estimates for most categories.⁶ The exception is for hospital services, for which the survey estimate seems to be substantially understated. It is possible that this disparity is exaggerated because of classification problems; some services in the survey were assigned differently from those in the independent sources. However, it is also possible that the more pervasive influence of insurance and other third-party payors in the hospital sector made it more difficult to obtain complete and accurate reporting through the survey mechanism.

Unlike the other categories, only one independent figure—the HIS estimate—is available for purposes of appraising the survey estimate for health insurance premiums. Since such premiums

are usually paid on a more-or-less regular basis (often through payroll deductions), it is less likely that the HIS level would be exaggerated, as appears to be the case for most other estimates from that source. The ratio of the survey to the HIS estimate for health insurance premiums is actually slightly in excess of unity, but—considering the problems of measurement—the best judgment is that the two sources are not substantively in disagreement.

Timing Differences

In previous chapters there has been considerable discussion of the possible effect of the time reference, or recall period, on the accuracy with which expenditures are reported. In most cases, it was concluded that a reduction in the recall period, if practicable, might achieve some improvement in reporting.

The time reference used for health expenditures, as mentioned earlier, was the 6-month period preceding the month of interview. One of the more evident alternatives that might be explored would be to reduce the recall period to 3 months. To examine this possibility, estimates were developed based only on expenditures reported in the final 3 months of each 6-month period.

Unfortunately, the timing of the interviews was such that it was not possible to construct such estimates so as to be unbiased from a seasonal standpoint. In fact, as previously noted for home furnishings (chapter 7), the alternate estimates are biased upward because the month of December is overrepresented in "second-quarter" composites. Apparently, the level of health expenditures reported for December is well above the average for other months, probably because many large bills are paid at that time for tax deduction purposes.

In addition to seasonal biases, the alternate "second-quarter" estimates might be exaggerated because of telescoping—the tendency to report an expenditure as having occurred in the more recent part of a recall period although it actually took place earlier. Although overstatements resulting from telescoping are often offset by understatements arising from a tendency to omit certain expenditures due to memory loss, the net balance may still be biased upward for expenditures of the type covered in this report.

A comparison between the original and alternate estimates is presented in table 10-4 for major categories of health expenditures. Although the alternate estimates are higher in each instance, as might be expected, the implications of the differences are not entirely clear. Even the seasonal and telescoping biases do not exaggerate the survey results for hospital services enough to make up for the gap between survey and alternate estimates. For the other categories, the evidence is that a reduction in the time reference, without the usual "bounding" controls to overcome telescoping, would probably result in an overstatement of expenditures. What is indeterminate, however, is whether, after instituting such controls, there would be sufficient gains to warrant the effort and cost of collecting these expenditures on a quarterly basis.

⁵ See, for example, Marquis et al., *op cit*.

⁶ The similarity for drug items, both prescription and over-the-counter drugs, was previously noted in chapter 4.

On balance, in spite of the multitude of problems associated with measuring health expenditures, it appears that the 1972-73 survey was about as successful in this respect as most previous undertakings in this field. Of course, it is possible that the

difficulties are so great that none of these efforts, including the present one, is fully adequate. The one sector where the present survey is possibly less effective than other methods is the heavily insured hospital-service category.

**Table 10-1.—Annual Aggregate Out-of-Pocket Health Expenditures, by Major Category:
Quarterly Panel and Diary Operation, 1972-73**

Category	Quarterly panel ¹		Diary operation ¹	
	Amount (millions of dollars)	Estimated coefficient of variation (percent) ²	Amount (millions of dollars)	Estimated coefficient of variation (percent) ²
Hospital services ³	\$2,713	5.0	\$1,900	15
Physician, nursing and medical services ⁴	8,896	2.0	9,183	5
Dental care	5,284	2.0	5,318	5
Eye care ⁵	1,913	4.0	2,032	15
Prescription drugs	3,699	2.0	5,019	5
Health insurance premiums, including medicare	11,811	2.0	2,880	(NA)

(NA) = Not available.

¹ Estimates based on reweighted original survey data tapes and do not incorporate editing changes which may have been made at later stages of processing by the Bureau of Labor Statistics. The survey estimates in this report may, therefore, differ somewhat from those already or to be published by that agency. Quarterly panel data are based on the average for calendar years 1972 and 1973, diary estimates on the average for fiscal years, July 1972-June 1974.

² Preliminary.

³ Includes room and board, x-rays and laboratory tests in hospital, professional services included as part of regular hospital charges, etc.

⁴ Includes physician services in hospital where billed separately; physician services outside of hospital (except eye examinations); private nursing services; chiropractor services; other medical services outside of hospital such as x-rays, laboratory tests, physical therapy, etc.

⁵ Includes eye examinations and dispensing of eye glasses and contact lenses.

**Table 10-2.—Annual Aggregate Out-of-Pocket Health Expenditures, Excluding Cost of Drugs and Sundries or Health Insurance
Premiums: Quarterly Panel and Diary Operation Compared to Independent Data Sources, 1972-73**

Source	Total expenditures ¹		Estimated expenditures for nursing home care (millions of dollars)	Total excluding nursing home care (millions of dollars)
	Amount (millions of dollars)	Estimated coefficient of variation (percent)		
Survey estimates ²				
Quarterly panel	\$18,916	2.0	\$ 110	\$18,806
Diary operation	18,682	5.0	250	18,432
Social Security Administration (SSA) estimates ³	22,566		3,332	19,234
Health Interview Survey (HIS) estimates (National Center for Health Statistics) ⁴	26,903	3.0	*	(NA)
Center for Health Administration Studies (CHAS) estimates (University of Chicago) ⁵	20,823	5.0	*	(NA)

*Amount of nursing home care included in total expenditure estimates from these sources is probably quite small (of the order of magnitude shown for expenditure survey estimates), but no specific information is available on the amount.
(NA) = Not available.

¹ Includes hospital and nursing home care, physicians' services in and out of hospital, dental care, other professional services, and eye care and services.

² Quarterly panel data based on average for calendar years 1972-73; diary estimates on average for fiscal years, July 1972-June 1974. Estimated coefficients of variation are preliminary.

³ Based on aggregates prepared by that agency for fiscal year, July 1972-June 1973. Unlike the survey estimates, which relate to the civilian non-institutional population, the SSA estimates cover the entire population, which accounts for the relatively large amount shown for nursing home care. The estimates are not derived in a manner which permits calculation of variance measures.

⁴ Based on average of HIS survey data collected for calendar years 1970 and 1974.

⁵ Based on CHAS survey data for 1970 updated to 1972-73 by two methods: (1) percentage change for each major expense category as indicated in SSA estimates, and (2) percentage change for each major category as indicated in HIS estimates. CHAS estimates in table represent average of data derived from the two methods and essentially assume that the relationship between CHAS and the two other independent sources was the same in 1972-73 as it was in 1970.

**Table 10-3.—Annual Aggregate Out-of-Pocket Health Expenditures, by Major Category:
“Best” Survey Estimates Compared to Independent Sources, 1972-73**

Category ¹	“Best” survey estimate ²			Ratio of survey estimates to: ³			
	Amount (millions of dollars)	Source (QP= quarterly panel; D=diary)	Estimated coefficient of variation (percent) ⁴	Social Security Administration (SSA) estimates	Health Interview Survey (HIS) estimates	Center for Health Administration Studies (CHAS) estimates	Personal Consumption Expenditures (PCE) (GNP accounts)
Hospital services	\$2,713	QP	5.0	.752	.541	⁵ .777	(NA)
Physician, nursing, eye care, and other professional services.	10,809	QP	2.0	1.049	.734	.963	(NA)
Dental care	5,284	QP	2.0	.993	.738	.866	(NA)
Drugs and sundries	8,076	D	5.0	1.034	(NA)	1.323	1.002
Prescribed drugs	5,019	D	5.0	(NA)	.862	(NA)	⁶ 1.032
Health insurance premiums including medicare	11,811	QP	2.0	(NA)	1.100	(NA)	(NA)

(NA) = Not available.

¹ See footnotes 3, 4, and 5 of table 10-1 for a description of the services included in the first two categories in this table. Note that eye care is combined with physician and other services in this table.

² In cases where the quarterly panel and diary estimates were not significantly different, the former was chosen as the “best” estimate because it had the smaller sampling variance. Where the estimates were significantly different, the one generally closer to the independent sources was selected for this purpose.

³ See section of text entitled “Previous efforts to measure health expenditures” and footnotes 3, 4, and 5 of table 10-2 for a description of these independent sources.

⁴ Preliminary. Coefficients of variation would be slightly higher for the HIS estimates and perhaps 2 to 3 times higher for the CHAS estimates used in deriving the ratios in this table. SSA and PCE estimates are not derived in a manner which permits computation of variances.

⁵ CHAS figure used in this computation represents the smaller of two estimates derived from that survey. The higher estimate was exaggerated by the inclusion of one extreme sample report. The hospital services category in CHAS includes nursing home care, which was relatively small for the population covered.

⁶ Based on survey and PCE data for 1972.

**Table 10-4.—Annual Aggregate Out-of-Pocket Health Expenditures for Hospital and Professional Services: Quarterly Panel Estimates
Based on Data for All Months and on Reported Expenditures in Final 3 Months of Each 6-Month Period, Compared
to Independent Data Sources, 1972-73**

Category ¹	Quarterly panel estimates (millions of dollars)		Ratio of survey estimates to			
	Based on data for all months	Based on data for reported expenditures in final 3 months of each 6-month period (2nd quarter estimates) ²	Social Security Administration (SSA) estimates		Center for Health Administration Studies (CHAS) estimates	
			Data for all months	“2nd quarter” estimates	Data for all months	“2nd quarter” estimates
Hospital services	\$2,713	\$3,077	.752	.853	.777	.881
Physician, nursing, eye care, and other professional services.	10,809	12,675	1.049	1.230	.963	1.129
Dental care	5,284	6,333	.993	1.190	.866	1.038

¹ Inclusions in these categories same as for table 10-3.

² Data weighted to represent annual totals, essentially by doubling the weights for each reported expenditure.

CHAPTER 11

Education, Travel, and Miscellaneous Expenses

Previous chapters have covered expenditure categories accounting for more than 90 percent of all consumer outlays for products and some 75 percent of those for services. This chapter deals with a number of the remaining categories, including education, travel and transportation, and miscellaneous products and services.

Expenditures for Education

An assessment of the survey results for education is handicapped by the relative unavailability of comparable independent data and by the complications introduced by scholarships and other forms of student aid. The quarterly panel was the principal survey source for this information; families were asked semiannually about outlays during the previous 6 months for tuition, school housing and living costs, books and supplies, transportation, and other expenses, by type and level of school. Information was also obtained on the amounts, if any, reimbursed by employers and on noncash scholarships or similar aid. Although various estimates may be derived from this composite of information, the principal survey data represent actual payments made by the family, presumably including those made possible by cash scholarships, loans, or grants secured directly by the student or the family for educational purposes. The only mention of this subject on the diary record was the inclusion of books and school supplies in one of the stipulated sections on the form; any other expenses were relegated to catchall sections.

One limited comparative source that is available is the information on receipts from students by institutions of higher education prepared by the National Center for Education Statistics (NCES) of the Department of Health, Education, and Welfare. That agency currently does not prepare similar estimates for other levels of education. The Personal Consumption Expenditures (PCE) estimates for education prepared in conjunction with the GNP accounts are not usable for this analysis, because they represent the expenditures of the educational institutions themselves, including not only funds received from students but also receipts from endowments, gifts, and other sources. Also, the PCE data are confined to private schools and colleges.

Table 11-1 compares the survey and the NCES data for student tuition and fees. It is evident, first of all, that the diary-based estimate is deficient in this respect, confirming the difficulty of measuring certain infrequent, high-cost items by record keeping. Although there may be some conceptual differences that affect the comparison, it appears that the

quarterly panel estimates for higher education fall somewhat short of the NCES levels, a result not too surprising in view of the problems in covering college students in household surveys. Those students away at college and still supported by their families were considered as part of the family unit. Although the estimates of college expenses obtained from the family in these cases might be reasonably accurate, at least for tuition payments, there could be some inaccuracy if the student contributed part of the cost. Those students who were more-or-less independent were to be enumerated directly at their college quarters. However, the semiannual inquiries on educational expenses happened to be scheduled during the 3 summer months and the 3 winter months, when many students, if not most, might be residing elsewhere. Although missing information was to be picked up at the intervening quarterly interviews, there is no assurance that such information could be gathered in all cases for this population group.

Although precise comparisons are not possible, the problems were probably considerably greater for other education-related expenses than for tuition. The quarterly panel estimate for housing and living costs for students away at college, for example, amounted to a little more than \$2 billion annually. This was just about equal to the NCES figure for college receipts from students for housing and food, presumably in facilities operated by the institution. The survey figure should have been much higher, however, because it covered expenses in off-campus housing and eating facilities and also other living costs, such as laundry, local transport, entertainment, and the like.

In spite of these difficulties, it appears, on balance, that an interview procedure such as that used in the quarterly panel may still be the best, if not only, option for estimating educational expenses. Although the procedure would not be without problems, it might be better to interview students away at college at their school quarters instead of obtaining proxy information from their families at home.¹ An important concomitant change would be to schedule such interviews during periods when there is maximum likelihood of finding students at their school quarters.

Although the discussion thus far has been limited to the college group, these account for something like 75 to 80 percent of specific consumer outlays for education. Expenses for tuition and living costs for other levels of education would also appear to be best obtained from an interview process. However, for all

¹ This is the procedure followed for college students in the Decennial Census.

cases, including college students, the diary procedure would probably be more effective for smaller expenses, such as books, school supplies, meals outside of school, boarding arrangements, and the like.²

Travel and Transportation

Although there have been a number of special surveys on vacations and travel, the 1972-73 expenditure survey represents about the only comprehensive effort to date in the U.S. to measure individual family outlays for this purpose. The procedure used took advantage of previous experience in identifying the number of trips made for various reasons. In the quarterly panel, questions were asked each quarter about any trips lasting overnight or longer taken by any family members. Questions were asked about purposes of the trips, destinations, durations, means of transportation, and expenditures in considerable detail for various items. The "bounding" procedure described in previous chapters was used throughout to avoid telescoping (that is, duplicate reporting of the same trips in successive interviews). The survey estimates represent expenditures for overnight trips that ended during the survey year in question; they exclude trips taken entirely for business purposes or to or from schools and colleges.

No direct comparisons are possible for travel expenditures. An indirect comparison—based on number of trips taken—can be made with the results of the National Travel Survey (NTS) taken in conjunction with the 1972 Census of Transportation. Since the accuracy of expenditure reporting often depends more on whether a particular expenditure is reported than on the precise amount of the expenditure, this comparison should be useful as an indicator. For purposes of the NTS, a trip was defined as travel involving a one-way distance of at least 100 miles, whether it lasted overnight or not. Business trips were included but not those to and from school. It is possible to adjust the NTS data to exclude trips not involving overnight stays and those primarily for business purposes. One remaining incomparability is that the expenditure survey estimates include overnight trips less than 100 miles from home and some trips primarily, but not exclusively, for business purposes. On the other hand, a series of identical trips (such as a person's visit to his or her family each weekend) was combined into a single trip in the expenditure survey; each would be considered a separate trip in the NTS.

Table 11-2 compares the quarterly panel and the NTS data on number of trips in a few categories. Many more comparisons could be made, but the necessary detail is not yet available for the expenditure survey. The estimates are not significantly different for any of the comparisons shown, although the expenditure survey data probably should be somewhat higher at least for the shorter trips. Nevertheless, in terms of trips at least, the data would not likely be very much out of agreement, whatever reasonable assumption is made for the remaining incomparabilities.

² In a related sector, expenditures for recreational lessons (music, dancing, swimming, etc.) amounted to about \$750 million annually in both the quarterly panel and diary operation and probably could be accommodated adequately in the latter.

One limited aspect of travel-related costs for which another comparison is possible is housing expenditures. The quarterly panel estimate of trip-related expenditures on hotels and other living quarters amounts to \$3.3 billion annually in 1972-73. A Personal Consumption Expenditures (PCE) estimate for hotels, motels, and trailer parks—which is not necessarily precisely comparable with the expenditure survey figure—was not significantly different (\$3.1 billion annually).

In a related sector, table 11-3 compares the survey and the PCE estimates for various categories of public transportation. The diary estimates are used in this instance because they are the only comprehensive survey measures for this sector. The comparison is somewhat obscured by the presence in the diary estimates of a sizable residual group, attributable to many incomplete or inadequately described entries in the diary record. Even making reasonable allowance for this residue, it is evident that the survey estimates are considerably understated relative to PCE for local transport but less so for other kinds of transportation, especially airline fares. These relationships are consistent with previous findings: expenditures, such as local transport, likely to be made by individual family members might be incompletely known and sometimes overlooked by the homemaker, usually the recordkeeper for the family. Expenditures for airline and rail travel, on the other hand, would generally represent more significant events, less likely to escape the attention of the recordkeeper.

Miscellaneous Products and Services

Table 11-4 compares survey and independent estimates for a group of miscellaneous products and services. The selection has no significance other than representing items for which reasonably valid comparisons appeared to be feasible at this writing. A more extensive and detailed analysis should be possible after the present PCE benchmark adjustment (to 1972 Census data) is completed.

Most of the categories shown represent those in which expenditures are relatively large in terms of unit costs. The results, not surprisingly, are consistent with previous findings for items of a similar nature. In the majority of instances, the quarterly panel provides either the only or the "best" survey data, and the estimates from the panel correspond reasonably well with the independent PCE levels.

One exception to this correspondence is bicycle purchases. In this case, the apparent survey underestimate may be attributable in part to the fact that the generally successful inventory method was not used for this item. Also, the difference may be exaggerated because of greater-than-usual uncertainties about the validity of the PCE estimate in a sector increasingly dominated by imports. The marked understatement for watches and jewelry³ could arise from a variety of causes, among them the irregularity of many of these purchases and the fact that so large a proportion may represent gifts. It is also possible that jewelry expenditures could be deliberately concealed because of reluctance to reveal the appearance of extravagance or even because of concern about the security of expensive possessions.

³ These expenditures were collected on a quarterly basis in the interview panel.

Table 11-1.—Annual Aggregate Expenditures for School Tuition and Fees: Quarterly Panel and Diary Estimates Compared to National Center for Education Statistics Data, 1972-73¹

Source	All schools		Colleges and universities	
	Amount (millions of dollars)	Estimated coefficient of variation (percent) ³	Amount (millions of dollars)	Estimated coefficient of variation (percent) ³
Survey estimates ²				
Quarterly panel	\$7,243.6	3.0	\$4,977.3	3.0
Diary operation	3,171.0	9.0	(NA)	
National Center for Education Statistics (NCES) data (U.S. Dept. of Health, Education and Welfare) ⁴	(NA)		6,035.0	

(NA) = Not available.

¹Quarterly panel estimates are averages for calendar years 1972 and 1973. Diary estimates are averages for 2 fiscal years, July 1972-June 1974, and NCES estimates are averages for 3 fiscal years, July 1971-June 1974.

²Survey data are derived from original data tapes and do not incorporate editing changes which may have been made at later stages of processing by the Bureau of Labor Statistics. The estimates may differ somewhat, therefore, from those already published or to be published by that agency.

³Preliminary.

⁴See appendix A for description.

Table 11-2.—Annual Aggregate Number of Nonbusiness Overnight Trips: Quarterly Panel Compared to National Travel Survey, 1972

Type of trip	Quarterly panel ¹		National Travel Survey (1972 Census of Transportation) ²	
	Number of trips (millions)	Estimated coefficient of variation (percent) ³	Number of trips (millions)	Estimated coefficient of variation (percent) ³
Total trips	137.9	4.5	135.7	3.0
Trips within U.S.				
Less than 500 miles round-trip	98.0	4.5	94.9	3.0
500 or more miles round-trip	31.9	5.5	32.7	4.0
Foreign trips	7.3	7.0	8.2	5.0
Destination not reported	0.8			

¹ See footnote 2, table 11-1, for qualifications concerning survey data.

² See appendix A for description.

³ Preliminary.

Table 11-3.—Annual Aggregate Expenditures for Public Transportation: Diary Estimates Compared to Personal Consumption Expenditures, 1972-73

Category	Diary operation ¹		Personal Consumption Expenditures (PCE) (millions of dollars) ³
	Amount (millions of dollars)	Estimated coefficient of variation (percent) ²	
Total	\$4,888.6	6.0	\$6,318.5
Streetcar, bus, & subway ⁴	1,042.9	8.0	2,135.0
Taxi	457.4	10.0	838.5
Railway ⁵	256.8	15.0	368.5
Airline	2,360.8	8.0	2,812.5
Other or type unknown	770.7		164.0

¹ See footnote 2, table 11-1 for qualifications concerning survey data. Diary estimates are averages for fiscal years, July 1972-June 1974.

² Rough preliminary estimates.

³ See appendix A for description.

⁴ Includes intercity as well as local bus.

⁵ Includes commuting as well as intercity travel.

Table 11-4.—Annual Aggregate Expenditures for Miscellaneous Products and Services: Quarterly Panel and Diary Operation Compared to Personal Consumption Expenditures Estimates, 1972-73

Category	Quarterly panel ¹		Diary operation ¹		Ratio of survey estimates to Personal Consumption Expenditures (PCE) ³	
	Amount (millions of dollars)	Estimated coefficient of variation (percent) ²	Amount (millions of dollars)	Estimated coefficient of variation (percent) ²	Quarterly panel	Diary operations
Products						
Pianos, new*	\$179.5	20.0	(NA)		.945	
Other musical instruments, new (excluding organs)*	261.2	9.0	(NA)		.899	
Bicycles*	637.2	4.0	(NA)		.651	
Watches and jewelry	2,815.7	3.0	\$2,340.9	6.0	.557	.463
Services						
Moving and storage	726.5	7.0	255.2	**	.883	.310
Funeral expenses ⁴	2,411.2	5.0	1,081.4	**	.939	.421
Furniture repair and upholstery	589.1	7.0	669.4	**	1.102	1.252
Electrical appliance repair ⁵	2,038.1	5.0	1,627.5	**	.802	.640

(NA) = Not available.

*Comparison for 1972 only; others based on 1972-73 average.

**Not available, but probably 2 to 3 times the size of the comparable quarterly panel coefficient.

¹ See footnote 2, table 11-1 for qualifications concerning survey data.

² Preliminary.

³ See appendix A for discussion of PCE data.

⁴ Includes cemetery plots as well as funeral parlor and burial expenses.

⁵ Includes radio, television, and other sound equipment repairs as well as those for other household electrical appliances. Survey figures include cost of service contracts for these purposes as well as direct expenditures.

CHAPTER 12

Conclusions and Recommendations

In any complex new endeavor—and survey undertakings are certainly no exception—it would be unrealistic to expect all program objectives to be accomplished at the first trial. In fact, success at that early stage may be reasonably measured by the degree to which at least tolerable results have been achieved. Using that yardstick, the 1972-73 survey can probably be judged a success. Perhaps even more important than the immediate result is the question of whether enough has been learned from the experience to help shape a significantly improved product for the future. Although numerous uncertainties remain, a good many promising indications have emerged from this preliminary evaluation.

General Conclusions for Diary Operation

Many of the findings from the 1972-73 survey were predictable on the basis of previous experience. For example, larger expenditures and recurrent outlays were better reported in the quarterly panel. Expenditures made primarily by the homemaker or on a frequent basis were more successfully reported in diary form. An unexpected outcome was the relatively effective performance of the diary procedure in some sectors, such as health and housing, in which the quarterly panel had been assumed to be the only realistic option. At the same time, many deficiencies were observed in the diary results, even in categories in which the diary procedure had been deemed to be the more appropriate source.

The specific findings of this report with respect to the diary procedure led to several general conclusions and recommendations:

1. **Use diary procedure as primary source unless evidence clearly dictates otherwise.**—A general rule of thumb suggested by the findings is that unless a clear-cut reason exists for using an interview procedure, such as the quarterly panel, it is better to depend on the diary approach for a given expenditure category. The diary would be a dubious source for items with exceptionally large variances (vehicles, appliances, furniture, etc.) or where unusual payment arrangements might require special questioning (insurance paid through payroll deductions, mortgage payments made automatically through bank accounts, hospital bills paid largely, but belatedly, by insurance, etc.). The diary might also be inferior to an interview process in cases where a composite set of questions may be necessary to obtain complete responses, as for example, in cataloging trips and vacations. In most other instances, the diary procedure appears to be at least as good a risk as the interview approach, and it is probably

a less costly one. Clearly, however, a number of modifications and improvements in the diary procedure are needed in order to overcome some rather evident deficiencies.

2. **Limit the range of items any one family would be asked to report.**—Using a diary covering all items of expenditure, as was done in the 1972-73 survey, may have certain theoretical benefits, but this approach considerably limits the ability to improve the overall process enough to satisfy all survey requirements. Evidently, one of the reasons for more success in covering food purchases than in covering other small items in the 1972-73 diary was the much greater amount of space and attention given to food. Moreover, for all categories, including food, there was a considerable undifferentiated residual group, resulting mainly from incomplete or inadequate entries which could not be classified in detail. These residuals detracted materially from the usefulness of the results. The general lack of space and the inability of interviewers to focus on so wide a range of items in reviewing the diaries probably largely accounted for this deficiency.

It would be impracticable to provide adequate space and annotation for all categories on a single form, and one rather evident solution would be to limit the range of items any one family would be asked to report. For example, one subsample might be asked to report only on food and other supermarket products, a second on clothing and household linens, a third on health-related expenditures, and so forth. There is obviously some practical limit to the number of subsamples that could be operated simultaneously. A good deal of thought and some experimentation would be needed to devise a workable plan.

Probably even more important than space considerations is that the use of this kind of specialized approach would make it feasible to provide a more focused set of check questions and procedures at the time of diary pickup. This would overcome some of the disparities noted in the present survey (such as underreporting of certain food items relative to others). Modifications of the present procedure might include more use of a combination of interviewing and recordkeeping. A good deal of developmental work would be required to devise effective checking procedures.

3. **Vary length of recordkeeping periods.**—The 1972-73 survey called for each sample family to keep records covering all items of expenditure for two weeks. If specialized subsamples are developed as proposed above, it is

obvious that either a larger overall sample would be needed or much higher sampling variances would have to be accepted. One way out of this dilemma would be to vary the length of the recordkeeping period, depending on the variances of the subjects covered for a given subsample. For example, for a low-variance category, such as food, it might even be possible to reduce the recordkeeping period to 1 week or 10 days. For most categories, such as clothing expenditures or health costs, however, an increase in the period of recordkeeping up to 3 months or longer might be considered. If only a limited set of items is covered, the reporting burden might be sufficiently reduced so that cooperation might be extended. In the system suggested, less costly collection methods, such as having respondents mail in completed diaries on a periodic basis (monthly, semimonthly, etc.) would be more practicable. Of course, provision would have to be made to follow up (by mail or telephone, if possible) nonrespondents or to carry out special checking for returns that did not meet prescribed standards.

4. **Provide separate diaries, where indicated, for individual members.**—In most cases, one person, the homemaker, probably maintained the diary for the entire family in the 1972-73 survey. Not surprisingly, the results clearly were better for the kinds of expenditures made by the homemaker than for those likely to be made by other family members. One possible way of obtaining more consistent results, if the expenditures to be reported are dispersed, would be to provide all family members over a certain age (perhaps 12 and over) with separate diaries in which to record their individual disbursements.¹ For this purpose, the diaries could be briefer and less formal than the main family record. Experimentation with various versions would obviously be important in developing a procedure of this kind.
5. **Reconsider the matter of providing monetary or other incentives for cooperation.**—An experiment was conducted in the early stages of the 1972-73 survey on whether an offer of cash payments would materially improve cooperation in maintaining diaries. The results were inconclusive, and the incentives were dropped from the procedure. However, most previous experience supports the notion that both cooperation and adequate reporting are benefitted by inducements of this kind.

If greater dependence is to be placed on diaries in a continuing operation, as is being proposed, it would seem especially important to reconsider offering incentives and to experiment with alternative approaches. The rewards should, of course, be attuned as closely as possible to achieving the main objectives. If, for example, it is important for individual family members to keep separate records, the incentives should be offered only if all such members agree to cooperate. Such cooperation would

presumably promote intrafamily pressure for individual compliance. Similarly, if cooperation over extended periods is requested, a useful approach is to offer a small reward for each subperiod with a sizable bonus for completing the entire cycle. Special consideration for prompt and complete returns by mail (if used) might be still another element. Payment of incentives might also be made contingent on respondents retaining cash-register tapes, bills, and other evidence of expenditures which could be consulted in reviewing the diaries. The incentives, of course, do not necessarily have to be monetary but could include gifts of various kinds, publications, or chances for prizes.

6. **Continue exploration of timing biases.**—Perhaps the most conclusive survey finding was that the traditional bias in diary operations was affirmed; that is, a higher level of expenditures is reported in the earlier as opposed to the latter stages of the recordkeeping period. In the present instance, the first-week expenditure estimates exceeded those for the second week in almost every category. More detailed information on this subject, including data for separate days of the reporting period and for various alternative combinations of days, will be provided in a later report. Although these details will hopefully provide further insights into the reasons for these differences, it seems likely that further research will be necessary to assess the implications of this phenomenon from the standpoint of deciding on recordkeeping periods and deriving estimates from diaries.

General Conclusions for Quarterly Panel

Although the deficiencies in the quarterly panel results could be attributed to a variety of causes, the fatigue caused by the voluminous questionnaire was undoubtedly a prime factor. Perhaps the single most important step that could be taken to improve the results would be a significant reduction in the scope and content of the inquiry. Extending the use of the diary procedure would accomplish a good deal in this direction. Such a change, however, would impair one of the auxiliary objectives of the survey—the ability to analyze the consumption patterns of individual families across a wide range of products and services.

From the standpoint of the operation as a whole, the main general conclusions with respect to the quarterly panel follow:

1. **Restrict coverage to essential items.**—Mention has already been made of the kinds of items that should probably be retained in the interview procedure—high-variance items, those requiring special questioning, and perhaps certain topics for which there were efficient composite interviewing packages. On this basis, the quarterly panel would probably cover not only vehicles, appliances, and furniture but also larger clothing items (e.g., coats and suits), other major furnishings (floor coverings and drapes), hospital services, school and college tuition, mortgage

¹ This procedure has been used successively for some years in the continuous consumer expenditures survey in the United Kingdom.

payments, moving and funeral expenses, insurance, subscriptions and membership fees, travel and vacation costs, and the like. Obviously, a more detailed review and analysis would be necessary to select the optimum set.

2. **Extend "inventory" approach.**—The effective use of the so-called "inventory" approach for appliances suggests that it be extended to other categories. Examples would be major furniture items, floor coverings and drapes, and certain kinds of durable equipment previously excluded. The evidence also suggests that, in the interest of reducing sampling variances, consideration be given to pooling the two estimates obtainable for a given year (or other time period) under this approach.

3. **Retain flexibility in reference periods.**—The procedure used in the 1972-73 survey drew on the well-documented principle that the larger the expenditure, the longer it can be recalled reliably. Thus, inquiries were made for specific categories in the interview panel on either an annual, semiannual, or quarterly basis, depending mainly on expenditure size. For the most part, the range of those choices was confirmed by the results. In a few cases, it appeared that a reduction in the recall period from 6 months to 3 months might be beneficial for some of the smaller items (certain household furnishings, a few of the smaller appliance groups, etc.). However, there did not appear to be any need to curtail the time reference for the larger expenditures. Longer recall periods for these items would serve to minimize the number of occasions any given family would be asked about the same purchases.²

4. **Retain analytical opportunities, where possible, with respect to individual family behavior.**—The proposed reduction in the content of the quarterly panel interviews and the possible introduction of specialized diaries means that only very partial expenditure data would be available for individual families, either for annual or for shorter periods. It would be desirable, if this could be done without jeopardizing the basic expenditure data, to retain as much of the ability as possible to study individual consumer behavior.

Some of the largest items, which distinguish one family's expenditures from another's, would be retained on the quarterly panel under the proposal, but most categories would not be covered. A first step to close the gap might be to add a few questions, perhaps on an annual basis, to identify exceptional expenditures in other sectors, such as large orthodontic bills, major house additions, purchase of expensive paintings, and the like.

Beyond that point, a further, but admittedly experimental, step would be to obtain certain limited information in the quarterly panel on behavioral patterns. This step would help in imputing data from the diary operation or other sources to the individual family record. For example, in the health sector, questions could be asked on frequency of doctor or dental visits, consistent use of costly drugs, etc. Answers to such questions, together with demographic and socioeconomic characteristics, could provide a basis for imputing from the diary or another source a value for health expenditures for the family. The topics covered could vary from one quarter to another, so that these behavioral questions would not add excessively to the quarterly panel interviews. Obviously, considerable research and testing would be needed before embarking on a large-scale endeavor of this kind.

Possible Use of Other Data Sources

When independent estimates were collected for purposes of comparison with the survey results, it became apparent that there are a variety of such sources that should be taken into account in developing a continuing data system in this field. For example, the Health Resources Administration of the U.S. Public Health Service is instituting a detailed national household survey on health expenditures. The Census Bureau operates a national annual housing survey containing some housing expenditure data and another survey on expenditures for home repairs and alterations. That agency is also launching a household survey on trips and vacations. There are also many market research and other private operations of this kind, although of rather uneven quality.

Some of these operations are or have been on a continuing basis, but the status of others is uncertain. The main point is that, in a system such as that suggested in this report, there is no reason that data from other sources of this kind could not be substituted for those from a continuing comprehensive expenditure survey, provided a set of matching demographic and socioeconomic characteristics is available. The advantage of specialized surveys, assuming they are of adequate size, continuity, and technical quality, is that particular subjects generally can be explored in considerably greater detail, using methodologies especially designed for that purpose.

Need for Methodological Research

Several instances have already been cited whereby further methodological research would be essential in shaping a more effective data system for consumer expenditures. Although the needs are varied, it appears that the highest priority would be to experiment with modifications in the diary procedure, such as testing the use of specialized diaries and diaries for individual family members, developing special checking procedures to overcome reporting deficiencies, exploring the feasibility of

² Since appliances, furnishings, and similar items are purchased very infrequently, repetition of the same questions on a frequent basis (e.g., quarterly), where it is not clearly necessary, is likely to create a considerable annoyance (and waste of survey capacity) without achieving any productive results.

varying lengths of diarykeeping periods, considering less expensive collection methods, and reexamining the use of monetary or other incentives for cooperation. Some longer range possibilities should also be investigated. For example, respondents might be asked to record the "universal product codes" now appearing on most canned and packaged supermarket and drug store items (likely to extend to many others) in the interest of achieving more precise and consistent product classification. In a different vein, when collecting diaries, interviewers might seek permission to take brief shelf inventories in an effort to locate the kinds of products that tend to be overlooked inadvertently by respondents. In more sensitive areas, such as alcoholic beverages, tobacco products, jewelry acquisitions, and the like, experimentation with techniques used in other sensitive fields would be in order. Finally, some further experimentation

should be carried out on timing biases (e.g., first-second week differences), which are characteristic of such surveys.

Since the survey findings support retaining an interviewing capability as a companion to the diary procedure, some further methodological research relating to the quarterly panel would also be in order. One fruitful area might be the extension to additional sectors of the inventory approach used for appliances in the 1972-73 survey. Another might be exploring less costly collection procedures in this instance, such as use of mail questionnaires or telephone interviews for certain of the quarterly contacts following the first visit. Mention has already been made of the need for research in the event that consideration is given to imputing expenditure data from various sources to individual family records.

APPENDIX A

Description of Independent Sources

Various independent sources of data have been used for comparison with the survey results. A description and discussion of these follow:

Personal Consumption Expenditures (PCE) Component of the Gross National Product (GNP) Accounts

The principal source of independent estimates used in this report is the Personal Consumption Expenditures (PCE) component of the Gross National Product (GNP) accounts. These estimates, in effect, represent the market value of goods and services purchased by persons and nonprofit institutions in the United States. A description of the methods used in deriving the PCE estimates occupies one hundred or more pages of text,¹ and only a brief summation will be presented here. The principal starting point is data on the production value of goods from the quinquennial census of manufactures and other sources and data on the value of services from a variety of sources. Through input-output analysis, the flow of commodities and services is traced through various channels in the economy; and to arrive at the final market value, cost and profit margins are added to the production value at each stage. Numerous assumptions are needed to achieve these complex transformations, and there is no way of assessing the accuracy of the processes.

For many of the comparisons made, especially those of a summary nature, PCE estimates are prepared by the U.S. Department of Commerce on a current basis. Those used in this report, however, have not yet been adjusted to the most recent benchmark (1972 Census data), a step which is currently nearing completion.

For more detailed categories, PCE estimates are ordinarily developed only for benchmark years, with the most recent, available at this writing, relating to 1967. To permit more detailed comparisons, the author performed an updating of the 1967 PCE estimates using a rather straightforward approach. The procedure was to project the 1967 PCE figures to 1972 by applying the percentage change in production value for the corresponding items as shown in the 1967 and 1972 Censuses of Manufactures. A similar procedure was followed for imports (shown separately in the detailed PCE estimates), in this case using census foreign trade statistics for the two dates. The main assumption in this method is that the marketing margins (percentage difference between production and market value), as calculated in PCE, did not change between 1967 and 1972,

¹U.S. Department of Commerce, Office of Business Economics (now Bureau of Economic Analysis), "Development of National Income Measures," *Supplement to Survey of Current Business*, Washington, 1954.

probably a conservative approach, since marketing and related costs have reportedly risen especially rapidly.

Of the numerous conceptual differences between the survey and PCE estimates, one is the inclusion in PCE of expenditures by nonprofit institutions (not a major factor in most comparisons). A discussion of relevant conceptual differences for various expenditure classes is included in the appropriate detailed chapters in this report.

1972 Census of Business Merchandise Line Data (Cens. Bus.)

In the 1972 Census of Business, respondents were requested to provide a distribution of retail sales in their establishments in a number of broad merchandise lines.² For establishments likely to carry a particular line in any quantity, additional detail was often requested.

Although response rates are lower than most others for this aspect of the Census, compliance amounted to 75 percent or more in most cases where these data were used for comparative purposes. In compiling merchandise line estimates, the Census Bureau adjusts the data for nonreporting.

The census retail trade data include sales to businesses and other nonhousehold users, although these are not believed to be large for those categories for which the data were used for comparative purposes in this report. Conceptual or coverage differences for particular expenditure classes are discussed, where applicable, in the appropriate detailed chapters.

1972 Census of Selected Service Industries (Cens. Serv.)

As part of the 1972 economic censuses, a census was taken of selected service industries. For such industries, data on gross receipts, along with many other items, are available.³ For those industries catering almost exclusively to the private population (and where no significant part of the receipts can ordinarily be attributed to business expenses, e.g., barber and beauty shops, motion picture theaters, etc.), the data on receipts were used directly in comparisons with the survey estimates. For more complex industries (e.g., laundry and dry cleaning), more detailed information on the distribution of receipts by types of

²U.S. Department of Commerce, Bureau of the Census, 1972 Census of Retail Trade, *Merchandise Line Sales*, Report No. RC 72-L, Washington, September 1975.

³U.S. Department of Commerce, Bureau of the Census, 1972 Census of Selected Service Industries, *Subject Series*, Report No. SC72-58, Washington, December 1975.

services is available for those establishments with paid employees. It was possible to derive estimates from this detailed information which were reasonably comparable to the survey data. For this purpose, however, it was necessary for the author to make a small adjustment in the original census statistics to account for receipts of establishments without paid employees.

Economic Research Service (ERS), Department of Agriculture Estimates

Annual estimates of expenditures for farm-produced foods used by the U.S. civilian population are prepared by the Economic Research Service (ERS) of the U.S. Department of Agriculture for 15 major subcategories of food products.⁴ These estimates are developed, basically, from production estimates compiled by the Department and allowing for imports and exports and noncivilian use. Expenditure estimates are derived from the net production data by applying average retail price data from the BLS Consumer Price Index, for commodities covered in that Index, and price data from the Department's Agricultural Research Service for other commodities. The ERS estimates provide a split between expenditures for home use and those in outside eating places for 7 broad categories (combinations of the 15 categories for which annual expenditure data are computed). The author extended this allocation to some of the additional categories by using the relationships shown in PCE at-home/away-from-home consumption.

Panel Data from the Market Research Corporation of America (MRCA)

A continuing national consumer panel of about 7,000 households is canvassed by mail by the Market Research Corporation of America, on a weekly basis for a variety of food products and on a monthly basis for clothing, household textiles, and various other items. For the monthly items, in particular, a considerable understatement in reporting has been observed over the years. However, MRCA has developed adjustment factors in conjunction with its clients (based on comparisons of panel and sales data for specific categories) in an effort to overcome this deficiency. The MRCA data used here incorporate the effects of these adjustment factors, the accuracy of which is unknown.

Social Security Administration (SSA)

The Social Security Administration (SSA) prepares annual aggregates of national health expenditures in various broad categories—hospital care, physicians' services, drugs and drug sundries, etc.⁵ Data are developed on the total cost of such services and products and on the source of funds for payment, whether directly by the consumer, or indirectly by health insurance, government, philanthropic or industrial enterprises, etc. A variety of primary data sources are used in the preparation of these estimates, including information on health pro-

viders from Internal Revenue Service records and statistics compiled by the American Hospital Association and other private health-related organizations. As is customary for constructed series of this kind, numerous transformations are made of the original data, and there is no way of assessing the validity of the results.

Health Interview Survey (HIS), National Center for Health Statistics, U.S. Public Health Service

On occasion (most recently for 1970 and 1974) an inquiry on health expenditures has been appended to the continuing Health Interview Survey (HIS) conducted by the Census Bureau under the sponsorship of the National Center for Health Statistics of the U.S. Public Health Service.⁶ The procedure in these recent efforts has been, at the conclusion of the regular HIS interview, to drop off questionnaires on this subject which are to be self-administered and mailed in by respondents. A separate form is provided for each family member requesting estimated total expenditures in the previous year for a few broad categories—dental bills, doctors' bills, hospital bills, prescription medicine, eyeglasses, and miscellaneous items. Information on health insurance premiums is also obtained. For comparison with the expenditure survey data, an average was taken of the 1970 and 1974 HIS estimates both of which were based on national samples of about 10,000 households.

Center for Health Administration Studies (CHAS), University of Chicago

A series of intermittent household surveys (the most recent covering 1970) on health expenditures has been conducted by the Center for Health Administration Studies (CHAS) of the University of Chicago.⁷ The procedure was to conduct an extremely detailed interview with the family to identify all episodes during the year which might entail substantial health expenditures, such as hospitalizations, serious accidents, pregnancies, chronic conditions, etc., and to inquire further about treatment and costs for each episode. A final series of questions addressed residual, smaller expenditures for the same period. About 3,800 households were covered in the most recent study. The 1970 CHAS data were updated to 1972-73 by using trend data reported in Social Security and Health Interview Survey data for comparable expenditure classes (see above).

Annual Housing Survey (AHS), Bureau of the Census

Since 1973, the Bureau of the Census has conducted a national Annual Housing Survey under the sponsorship of the Department of Housing and Urban Development.⁸ The data collected

⁶U.S. Department of Health, Education, and Welfare, Public Health Service, "Personal Out-of-Pocket Health Expenses, United States, 1970," DHEW Pub. No. (HRA) 74-1518, Washington, June 1974.

⁷Ronald Andersen, Joanna Kravits, Odin W. Anderson, and Joan Dudley, "Expenditures for Personal Health Services, National Trends and Variations (1953-1970)," DHEW Pub. No. (HRA) 74-3105, Washington 1973.

⁸U.S. Department of Commerce, Bureau of the Census, "Annual Housing Survey: 1973," Current Housing Reports, Series H-150-73, Washington, April 1976.

⁴U.S. Department of Agriculture, Economic Research Service, *Marketing and Transportation Situation*, Washington, August 1975

⁵U.S. Department of Health, Education, and Welfare, Social Security Administration, "Compendium of National Health Expenditures Data," DHEW Pub. No. (SSA) 76-11927, January 1976.

consist primarily of detailed characteristics of housing units and their occupants. A limited number of expenditure items is also included on rent, mortgage payments, and other housing costs; and, in the early years, some questions were also asked on expenditures for automobiles and selected household appliances. The 1973 expenditure estimates relate roughly to the 12-month period from autumn of 1972 to autumn 1973. The 1973 sample consisted of some 53,000 interviewed units in 461 areas throughout the country.

Survey of Residential Alterations and Repairs (SORAR), Bureau of the Census

For a number of years, as part of its construction statistics program, the Bureau of the Census has conducted a quarterly sample household survey to collect data on expenditures for alterations and repairs by owners of residential properties.⁹ The survey uses a very detailed approach for these purposes, including a "bounding" technique, described earlier in this report, to avoid telescoping. Households are usually interviewed for 6 consecutive quarters for this survey, with the first quarter used mainly for set-up purposes and to screen out inapplicable cases. The interview sample consists of an effective sample size of about 6,500 owner-occupied households each quarter in 235 sample areas. In addition, about 4,000 nonresident owners of residential properties are canvassed by mail for these purposes.

National Center for Education Statistics (NCES), Department of Health, Education, and Welfare

Among its many institutional surveys, the National Center for Education Statistics (NCES) conducts an annual "Higher Education General Information Survey" (HEGIS), covering virtually all public and private institutions of higher education (2-year colleges as well as 4-year institutions and universities).¹⁰ A considerable array of information is collected, including

⁹U.S. Department of Commerce, Bureau of the Census, "Residential Alteration and Repair, 1972 Annual Report—Part 1, All Residential Properties," Construction Reports, Series C50-72A, Washington, October 1973.

¹⁰U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," Report No. NCES 76-121, Washington 1976.

financial data on receipts of funds by source and expenditures by purpose. The data relate to fiscal years (July-to-June); and, for comparison with the 1972-73 expenditure survey data, it was decided that an average of HEGIS data would be appropriate for the three fiscal years, July 1971-June 1972, July 1972-June 1973, and July 1973-June 1974. Response rates for the HEGIS survey are generally quite high (around 95 percent of the institutions contacted). The data from HEGIS on receipts from students for tuition and fees were regarded as reasonably comparable to the consumer outlays for this purpose, reported in the expenditure survey.

National Travel Survey (NTS), Bureau of the Census

The National Travel Survey was an adjunct to the 1972 Census of Transportation.¹¹ The survey was conducted with a national probability sample of some 24,000 households in 449 different geographic areas of the country. The sample was subdivided into three systematic subsamples with each canvassed quarterly on a different cycle of months (e.g., the first in February, May, August, and November; the second in March, June, September, and December, etc.). Information was collected on numbers of trips taken and on various details about each trip. Mail questionnaires were used with provision for mail and telephone followup to handle nonresponse or to clarify questionable data. Cooperation averaged 90 percent for eligible households.

A.M. Best and Co.

Aggregate data on gross insurance premiums for private vehicles, compiled from industry sources by A.M. Best and Co.,¹² have been used for comparison with the survey data. These are also the base data used by the Commerce Department in developing its PCE estimates of net premiums (gross premiums less claims paid) for vehicle insurance.

¹¹U.S. Department of Commerce, Bureau of the Census, National Travel Survey, "Travel During 1972," Report No. TC-72-N, Washington, September 1973.

¹²A.M. Best and Co., "Best Aggregate and Averages—Property-Liability," Annual publication.

APPENDIX B

Facsimile of Diary Pages for One Day of the Reporting Period

Page 4

FIRST DAY		ENTER DAY							
Note: If you need additional space for any category, use pages 18 and 19.									
FOOD AND BEVERAGES									
OFFICE USE ONLY	Item <small>(Describe the item purchased, such as whole milk, T-bone steak, dried apricots, all purpose flour, salines, etc.)</small>	Number of cans, bottles, packages, etc.	Net weight or volume per unit <small>(Examples: 8 oz., 1 qt., 5 lbs., etc.)</small>	Is this item - <small>(Mark only one)</small>				Total cost <small>(Exclude sales tax)</small>	
				Fresh	Frozen	Canned	Other	Dollars	Cents
~ 51 011	Dairy and Bakery Products <small>(Indicate if milk is delivered)</small>								
A				1	2	3	4	\$	
B				1	2	3	4		
C				1	2	3	4		
D				1	2	3	4		
E				1	2	3	4		
F				1	2	3	4		
G				1	2	3	4		
H				1	2	3	4		
J				1	2	3	4		
K				1	2	3	4		
	Meat, Fish, and Poultry <small>(Indicate the cut of meat)</small>								
L				1	2	3	4	\$	
M				1	2	3	4		
N				1	2	3	4		
P				1	2	3	4		
Q				1	2	3	4		
R				1	2	3	4		
S				1	2	3	4		
T				1	2	3	4		
U				1	2	3	4		
~ 51 029	Fruits and Vegetables <small>(Indicate if dried)</small>								
A				1	2	3	4	\$	
B				1	2	3	4		
C				1	2	3	4		
D				1	2	3	4		
E				1	2	3	4		
F				1	2	3	4		
G				1	2	3	4		
H				1	2	3	4		
J				1	2	3	4		
K				1	2	3	4		
	Beverages								
L				1	2	3	4	\$	
M				1	2	3	4		
N				1	2	3	4		
P				1	2	3	4		
Q				1	2	3	4		
R				1	2	3	4		
~ 51 037	All Other Foods								
A				1	2	3	4	\$	
B				1	2	3	4		
C				1	2	3	4		
D				1	2	3	4		
E				1	2	3	4		
F				1	2	3	4		
G				1	2	3	4		
H				1	2	3	4		
J				1	2	3	4		
K				1	2	3	4		
L				1	2	3	4		
M				1	2	3	4		
N				1	2	3	4		
P				1	2	3	4		
Q				1	2	3	4		

Page 5

FIRST DAY										<input type="checkbox"/> None <input type="checkbox"/> PC					
MEALS AND SNACKS PURCHASED AT A RESTAURANT, CARRY-OUT, ETC.															
OFFICE USE ONLY		Item <small>(Include breakfasts, dinners, school lunches, snacks, and drinks purchased at a restaurant, bar, vending machine, etc.)</small>				Was this purchased at a — <small>(Mark one)</small>					Total cost <small>(Include tips)</small>				
~ 31 047						Restau- rant	Cafe- teria	Drive-in or carry-out	Vending machine	Other	Dollars Cents				
A						1	2	3	4	5	\$				
B						1	2	3	4	5					
C						1	2	3	4	5					
D						1	2	3	4	5					
ALL OTHER PURCHASES AND EXPENSES															
OFFICE USE ONLY		Item <small>(Describe the item purchased)</small>				Total cost <small>(Exclude sales tax)</small>		OFFICE USE ONLY		Item <small>(Describe the item purchased)</small>				Total cost <small>(Exclude sales tax)</small>	
~ 21 055						Dollars Cents		~ 21 089						Dollars Cents	
~ 21 055		Cleaning, Laundry Supplies, and Paper Products						~ 21 089		Housewares, Furnishings, Hardware, and Garden Supplies <small>(mirrors, light bulbs, nails, etc.)</small>					
A						\$		A					\$		
B								B							
C								C							
D								D							
E								E							
F								F							
G								G							
~ 21 063		Newspapers, Books, Postage, Stationery, and School Supplies						~ 21 097		Gas, Oil, Tolls, Parking Fees, and Other Vehicle Expenses; Public Transportation Expenses					
H						\$		H					\$		
J								J							
K								K							
~ 21 063		Personal Care, Drugs, and Medical Supplies <small>(Indicate if prescribed by a doctor)</small>						~ 21 104		Clothing, Shoes, Jewelry, and Linens <small>(such as dress shirts, work shirts, casual slacks, etc.)</small>					
A						\$		A					\$		
B								B							
C								C							
D								D							
E								E							
F								F							
G								G							
H								H							
J								J							
~ 21 063		Laundry and Diaper Service, Beauty and Barber Shop, Household Help, Babysitters						~ 21 113		Other Purchases and Expenses <small>(toys, hobbies, contributions, etc.)</small>					
K						\$		K					\$		
L								L							
M								M							
N								N							
P								P							
Q								Q							
R								R							
~ 21 063		Movies, Plays, Other Entertainment, Club and Other Membership Dues						~ 21 113		Other Purchases and Expenses <small>(toys, hobbies, contributions, etc.)</small>					
S						\$		S							
T								T							
U								U							
GIFTS															
OFFICE USE ONLY		Item <small>(Describe the item purchased)</small>				Was this purchased for a member of this household? <small>(Mark one)</small>		Total cost <small>(Exclude sales tax)</small>							
~ 31 070						Yes	No	Dollars Cents							
A						1	2	\$			↑				
B						1	2								
C						1	2								
D						1	2								

APPENDIX C

Listing of Detailed Sections of Questionnaire for Quarterly Panel

Section 1—Household Record and Consumer Unit Determination (listing of household members, their characteristics, and assignment to consumer units, if more than one).

Section 2—Rented Living Quarters (determination of rental costs and facilities included in rent).

Section 3—Owned Living Quarters and Other Owned Real Estate (recording of real property owned by respondents, for what purposes used, original cost, and related items).

Section 4—Mortgage Payments and Ownership Costs (type and amount of indebtedness on each property, mortgage payments, real estate taxes, and other ownership costs during survey year).

Section 5—Expenditures for Repairs, Alterations, and Maintenance of Owned Property (quarterly inquiry on expenditures for these purposes for owned property).

Section 6—Utilities, Fuels, and Household Help (quarterly inquiry on expenditures for these purposes).

Section 7—Clothing and Household Textiles (quarterly inquiry on expenditures for clothing or footwear, clothing accessories, and jewelry; for alterations or repairs to clothing on footwear; for rental of clothing; for household linens; and for sewing materials).

Section 8—Major Equipment Items—Inventory and Purchases (initial inventory of major household appliances and equipment and annual inquiry on expenditures during survey year for purchase of these items).

Section 9—Minor Equipment Items—Inventory and Purchases (initial inventory of minor household appliances and semiannual inquiry on expenditures for purchase of these items).

Section 10—Service Contracts (initial listing of service contracts for maintenance or repair of equipment or appliances or for such services as pest control and lawn maintenance, and inquiry on annual expenditures for such contracts).

Section 11—Equipment Repairs (quarterly inquiry on expenditures not covered by service contracts for repairs to equipment and appliances).

Section 12—Home Furnishings and Related Household Items (semiannual inquiry on expenditures for furniture and other furnishings such as floor coverings, furniture or window coverings, dinnerware, cookware, flatware; suitcases, luggage; decorative items; and furniture rental or repair).

Section 13—Automobiles and Other Vehicles—Inventory or Purchases (initial inventory of automobiles and other vehicles and annual inquiry on expenditures for purchase of vehicles and for installment payments).

Section 14—Renting and Leasing of Vehicles (inquiry—semiannual in 1972, annual in 1973—on expenditures for these purposes).

Section 15—Vehicle Operating Costs (quarterly inquiry on expenditures for tires and tubes, vehicle accessories, services and repair work, gasoline and oil, other current maintenance, and other operating costs such as license fees and parking).

Section 16—Out-of-Town Trips and Vacations (quarterly inquiry on overnight trips and vacations with detailed expenditures for transportation, housing, food, and other purposes on each trip).

Section 17—Insurance Other Than Health (listing of policies held and annual inquiry on expenditures by family for these purposes).

Section 18—Hospitalization and Health Insurance (listing of policies held, type and coverage of policies, and annual inquiry on expenditures by family for these purposes).

Section 19—Medical and Health Expenditures (semiannual inquiry on out-of-pocket expenditures for hospital, physician, dental, and other professional services, and for eye examination, prescription drugs, and medical supplies).

Section 20—Education Expenses (semiannual inquiry on out-of-pocket expenditures for tuition, fees, housing and living costs, purchase or rental of books and equipment, and other education costs, by type of school).

Section 21—Subscriptions and Memberships (listing of subscriptions for newspapers, magazines, and other reading or cultural activities; memberships in social, fraternal, and other nonbusiness organizations; and annual inquiry on expenditures for these purposes).

Section 22—Miscellaneous Expenses (semiannual inquiry on expenditures for various large miscellaneous items such as weddings and other affairs, funeral and related costs, pet costs other than food, and moving expenses).

Section 23—Expenses Patterns for Food, Beverages, and Other Selected Items (quarterly inquiry to obtain overall expenditures

by family for food and beverages and for a few other items such as garden supplies, phonograph records, film, and admissions to entertainment places).

Section 24—Expenses Patterns for Selected Services and Goods (annual inquiry to develop overall expenditures by family for other smaller categories such as laundry, dry cleaning, public transportation, tobacco, and hair care).

Section 25—General Housing and Consumer Unit Information (general description of housing units occupied by survey families and selected characteristics of family such as education of

family head, and work experience and income of family members in the year preceding the survey year).¹

Section 26—Work Experience and Income in Survey Year and Other Selected Items (detailed work experience and income of family members in survey year and information on taxes, contributions, occupational expenses, charges in assets and liabilities during year, and credit finance charges).

¹ Information on income and work experience in the year preceding the survey year was obtained at the second quarterly visit so that there would be some information on these subjects for families which moved out of sample addresses before the detailed inquiry on these matters obtained in Section 26 at the final (fifth) quarterly interview.

working papers

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